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EDUCATION AS A FACTOR IN ECONOMIC GROWTH.

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THE VALUE OF AN EDUCATION IN THE ECONOMIC GROWTH OF AN UNDERDEVELOPED COUNTRY (INDIA) WAS INVESTIGATED USING THE CASE STUDY APPROACH. DATA WERE GATHERED AT BOTH THE CENTRAL GOVERNMENT AND VILLAGE LEVELS THROUGH INTERVIEWS WITH INDIAN GOVERNMENT OFFICIALS AND FROM OFFICIAL GOVERNMENT PUBLICATIONS CONCERNING THE NATION'S EDUCATIONAL EFFORTS, AS REFLECTED IN SUCH THINGS AS LITERACY RATES, SCHOOL ENROLLMENTS, SCHOOL DROPOUTS, AND MANPOWER. THE VILLAGE OF RAAJPUR IN UTTAR PRADESH PROVINCE WAS SELECTED FOR AN INTENSIVE LOCAL STUDY, PRIMARILY BECAUSE OF CONTACTS ESTABLISHED THERE DURING AN EARLIER STUDY OF THE EFFECT OF INDUSTRIALIZATION ON THE HINDU ETHIC AND SECONDLY BECAUSE OF ITS MODERN SUGAR FACTOR WHICH REPRESENTED A PROTOTYPE OF THE FUTURE DEVELOPMENT WHICH MANY INDIAN PLANNERS ENVISION. INTERVIEWS WITH OFFICIALS OF THE SUGAR MILL, SCHOOL ADMINISTRATORS AND TEACHERS, PUPILS, AND PARENTS WERE CONDUCTED OVER A 3-MONTH PERIOD. IN ADDITION, A QUESTIONNAIRE WAS ADMINISTERED TO 5TH, 6TH, 9TH, AND 11TH GRADE PUPILS. THE INTERVIEWS AND QUESTIONNAIRE WERE STRUCTURED TO ELICIT THE ATTITUDES HELD BY RESPONDENTS CONCERNING THE ECONOMIC RETURNS OF AN EDUCATION. EDUCATIONAL PROGRAMS IN INDIA ARE NOT CONDUCIVE TO THE DEVELOPMENT OF MARKETABLE SKILLS AND THAT MORE ATTENTION TO THIS AREA IS NEEDED IF EDUCATION IS TO ACHIEVE MAXIMUM UTILITY AS AN INSTRUMENT FOR ECONOMIC GROWTH. (JH)

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EDUCATION AS A FACTOR IN ECONOMIC GROWTH

by

ALEX MACKERTICH

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requirements for the degree of

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CHAPTER 1

INTRODUCTION

Background to the Problem

Developing nations are obsessed by the desire to attain the living standards and affluence of the developed nations. India is no exception to the rule, although she prefers a privileged position in any club of "so-called underdeveloped nations,"¹ because of her ancient greatness and spiritual heritage.² Once granted this privileged position, Indian leaders are willing to admit needs and scarcities of truly Himalayan proportions.

In spite of fervent desire and commendable efforts on the part of many developing nations, the gap in living standards between developed nations and underdeveloped

¹S. N. Mukhopadhyaya, "Is a planned approach to the integration of education and training with economic development desirable and/or possible? What has been the experience of India?" Economics of Education in Planned Development of India, Chapter II, page 2. (Unpublished notes for a book, personally loaned the writer after a series of interviews at his office in the Central Institute of Education, New Delhi, March 1965).

²K. N. Sundaram, Director of Applied Manpower Research, interviewed in his office in New Delhi, March 1965. Mr. Sundaram presented this idea to the assembled body of American Engineers in Detroit in 1964, where he objected to India being considered as "so many times and population of one of the newly independent countries, or a South American country."

nations is widening.³ Paul Hoffman, addressing the New York State Bankers Association at Lake Placid, said:

It would seem that in the decade ending 1959 per capita income in the approximately one hundred underdeveloped nations of the world increased by around \$10 from about \$90 to slightly over \$100, but this is to be set against an increase in Holland of over \$300, in the United Kingdom, Western Germany, and Switzerland of \$400, and in the United States and Canada of more than \$500.⁴

Capital formation, economists agree, is an imperative of an affluent society and a productive economy. But with rapidly increasing populations to feed and with decreasing prices for their primary products on the international market, resources for capital formation are scarce in developing nations.⁵

Countries the size of India, however, are not greatly influenced in their quest for economic growth by external trade, which can take up a comparatively insignificant share of their national income. As Kuznets puts it:

³Gunnar Myrdal, Economic Theory and Underdeveloped Regions (London: Gerald Duckworth and Co., Ltd.), p. 7. C. P. Snow, The Two Cultures and the Scientific Revolution (Cambridge University Press, 1959), p. 43. Simon Kuznets, Postwar Economic Growth (Cambridge, Mass.: Belknap Press of Harvard University Press, 1964), p. 118.

⁴Paul Hoffman, in his official capacity as managing director of the United Nations Special Fund, June 17, 1960, quoted by Adam Curle, Educational Strategy for Developing Societies (London: Tavistock Publications, 1963), p. 39.

⁵Myrdal, op. cit., p. 7.

The hard core of these speculations is the judgment that the political and institutional factors may be more important than the purely economic (such as relative supplies of labor, capital and so forth) particularly when they related to a large nation. (Italics mine) Trends in the recent study of economic growth have pointed up the importance of social and political institutions as distinct from traditional economic variables.⁶

Indians, however, are quick to assert that India can do away with her extremely low standard of living without changing Hinduism or "the Hindu ethic." As one Indian author writes:

Indian unity is different from that obtained in other countries...it is fundamentally of a metaphysical order, soul attuned to soul and all attuned to the divine. It cannot be destroyed ...India has one and only one problem: poverty. Remove that and sweet reasonableness will come as naturally as light from the sun.⁷

Western writers are not necessarily opposed to this point of view. While reiterating that the Hindu ethic in all probability could not have created capitalism, they feel that once capitalism is introduced in India, it can be absorbed into the Hindu way of life.⁸ Be

⁶Kuznets, op. cit., p. 127.

⁷Ranjee, Shahani, Saturday Review, Vol. 43, No. 28 (July 9, 1960), pp. 12, 13.

⁸Joseph W. Elder, Industrialism in Hindu Society: A Case Study in Social Change. (Ph.D. Thesis, Harvard University, Cambridge, Mass., April, 1959). Elder treats "industrialism" in its strict connotation without the often added complication of "urbanism," with its special Indian characteristics. He has, therefore, treated industrialism in a natural setting, set among workers living with their families.

that as it may, it comes as no easy transition that the latest evolution of thought in the West on the subject of economic growth deals precisely with the human element in production. Theodore Schultz says:

...less that one-third of the national income of countries can be explained by quantitative inputs such as capital and labor. ...the residual has not been accurately broken down, but the most important factors seem to be the improvement of the human material through better health and training, and through the development of science and technology.⁹

The paradox of the Indian attitude is demonstrated in the position that it admitted Western pre-eminence in physical capital at the expense of human values, only to find that modern economic thought bids fair to prove that it is precisely India's lack of attention to human values that had held back her economic progress and development in physical capital.

This entry into the field of philosophies and attitudes which underlie man's activities bids fair to view man as a whole being and not simply the proverbial "economic man" of Adam Smith. While it is of sociological significance to know the effect of industrialism on the Hindu ethic or culture, it is of economic importance to

⁹Theodore W. Schultz, "Capital Formation by Education," Journal of Political Economy, Vol. LXVIII, No. 6 (1960), pp. 571-583.

know the effect of the Hindu ethic on industrialism.¹⁰

The role of education in relation to culture is open to further research. Curle¹¹ has noted that in conservative cultures education tends to emphasize and promote the status quo, while in progressive cultures education tends to emphasize and promote the innovative elements of change. He makes no mention of the element of time-lag between what may be called the thrust of culture and the educational pattern that supports the movement, but the whole question is still in the exploratory stage.

Whatever may be said for education in the scheme of economic development, there is great danger of education falling into a sort of fetishism, i.e., the magical cure for all men's ills, whose name men invoke as if it were deity.¹² In India, education is sought after as the source of wisdom - a mixture of medieval scholastic self-discipline and common voodoo, worshipped in the form of the goddess

¹⁰Joseph W. Elder, op. cit., Elder makes the clear distinction between "industrialism" and productivity in his thesis. While his study is primarily sociological, in the sense that he examines the effects of industrialism on social mores, the opposite, i.e. the effects of social mores on industrialism, seems more apt for our purpose.

¹¹Adam Curle, "Education, Politics and Development," Comparative Education Review (February, 1964), pp. 226-245.

¹²G. McLeod Bryan, Whither Africa? (Richmond, Virginia: John Knox Press, 1961), p. 135. Bryan speaks more in terms of an "ism," while it is Colm Brogan who spells out the similarity to voodoo fetishism.

Saraswati to whom gifts are given, some going to Brahmin priests and others to teachers who made success possible.

Learning in India through the ages had been prized and pursued not for its own sake, if we may so put it, but for the sake, and as a part, of religion. It was sought as the means of salvation or self-realization, as the means to the highest end of life viz. Mukti or Emancipation.¹³

Knowledge in the sense of ennobling the receiver through its possession is often considered worthy in itself. The application of knowledge to solve the problems of society is much more difficult to achieve than in American culture.

Pavitra speaks of the "loss of spiritual greatness" as the price of industrialization. He deplores, "the collective rather than the individual attitude towards education."¹⁴ Coombs, on the other hand, speaks of "the indians' constant complaint of discrimination in the field of obtaining know-how. Indians could do it if they were shown how. This attitude assumes know-how to be of secondary importance - as if all one needed is potential."¹⁵

¹³R. K. Mookerji, Ancient Indian Education (London: Macmillan and Co., 1947), p. xxi.

¹⁴Pavitra (P. B. Saint-Hilaire), Education and the Aim of Human Life (Pondicherry, India: Sri Aurobindo Ashram Press, 1962), pp. 3 and 29.

¹⁵Philip H. Coombs, "Education's Role in the Developing Nations," Saturday Review (August 17, 1963), p. 29.

Should Indian efforts to widen and deepen their educational system be aided through foreign funds? Barbara Ward¹⁶ feels they should. She would have us ignore the danger signals of the educational scene in India and embark on a Marshall Aid Program to furnish India with "2,000 million pounds sterling in five years."

John Vaizey finds this idea preposterous. He considers it "no solution to harness external assistance for certain parts of the programme."¹⁷

Rostow takes a middle ground position which is perhaps the most defensible:

Development cannot and should not be wholly viewed in national terms; and, certainly, external assistance is important, but the heart of economic development consists in national measures of self-help.¹⁸

Problems To Be Investigated

The role of education as an investment in the nation as a whole and the role of education as an investment in a village, specially chosen as a prototype of the village of the future, were the general problems investigated.

¹⁶Barbara Ward, India and the West (London: Hamish Hamilton, 1961), p. 155.

¹⁷John Vaizey, The Economics of Education (London: Faber and Faber, 1962), p. 134.

¹⁸W. W. Rostow, View from the Seventh Floor (New York: Harper and Row, 1964), p. 85.

The role of education as an investment in the nation as a whole is the concern of the central government of India, at New Delhi. Here the atmosphere is one of sophisticated international ideas. These questions were investigated:

1. What is the present condition of India in terms of literacy, and formal education including primary, middle, secondary and university education? How does India compare with other countries in these areas?
2. What information do we have in terms of manpower in India - in teaching, in technical and vocational training, in science and engineering, in the field of medicine and in employment?
3. What have been the investments in education since independence and through the last three Five-Year Plans, considering the swings in national policy to and from emphases on primary, secondary, university, technical, basic, social and cultural education?
4. What have motivated these attitudes to investment in education? What economic data have backed these moves? For example, does something like the Fabricant-Kenfrick information exist by way of "residual element" so effectively used by Schultz for the U.S. case for education?
5. What are future plans for education in India? What are the views of experts on continuing deficiencies in Indian education?

The role of education as an investment in a particular village is the concern of local officials under supervision from the State Department. Here the atmosphere is one of provincial and local ideas. These questions were investigated:

1. What are the expenses of education here in terms of the individual consumer? What does he pay for school, in terms of fees, books and stationery?
2. What are the financial and social backgrounds of students and the levels of learning attained?
3. What are the knowledge and aspirations of students as to future earnings and opportunities?
4. What are the foregone incomes of students at the levels of education considered?
5. What are the educational backgrounds of students in terms of the education of their parents?

Design of the Study

A case study of education using data gathered at the micro level, i.e., a village unit, was conducted against the background of information gathered at the macro level, i.e., at the national level of the Central Government.

Data at the macro, or national, level was gathered from officials of the Indian government and from official government publications. Analysis of the data was made relative to such topics as the residual element in national output attributable to education, the question of foregone

income, the hidden costs of education, and economic policy as affected by investment in human capital.

Data concerning education in the village was obtained through the application of a questionnaire, specially designed for conditions in the village with the aid of educational experts on the writer's committee and persons familiar with India and the village. The questionnaire was further adapted to local conditions on arrival in the village. For example, although initially geared for parents of children, the questionnaire was later adapted for administration to the children in the schools, including on-the-spot adaptation to the different grade levels in classrooms. The questionnaire was also administered to teachers and mill officials in a series of open-end interviews, at their leisure or during their office hours.

Responses to the questionnaire by the children were analyzed with special reference to their caste distribution in relation to their educational aspirations; the costs of education, including foregone income; and their estimated future incomes based on their years of schooling. A tie-in with some of the sociological findings of Elder from the study of the village and his more recent studies in India was necessary in integrating the data.

Significance of the Study

The fundamental significance of the study centers

on application of the notion of education as an investment to (a) decision-making at the Central Government level, and (b) decision-making by individuals in the milieu of a selected village.

This potential divergence of interests and attitudes is important not only because of its application to India, which constitutes one-seventh of the world's population, but also because it illustrates many problems confronting the newly developing nations.

In itself, India provides an example of a large, separate portion of humanity which must itself generate practically all of the motivating forces necessary to achieve self-development. Apart from the sheer size of her population (enough to justify the necessity of relying on herself to achieve any substantial economic development,¹⁹ since international trade is only six per cent of gross domestic product)²⁰ her peculiar institutions, when combined with this massive size and population, definitely make India a self-generating area.

As an example of an underdeveloped nation, India is illustrative of the two-sector economy of neo-classical

¹⁹Kuznets, op. cit., p. 127.

²⁰United Nations, Yearbook of National Account Statistics, 1960, Table C.

theory in this field. Here one finds the example of an ex-colonial territory, left with the after-effects of British imperialism; here one finds the classic low marginal productivity of labor (often cited as zero).

The two-sector economy of neo-classical theory finds in India central, Western-oriented, theoretical leadership consistently eager to achieve Western progress, even if only in the exterior trappings of the culture of the West such as its hardware: radio, television, automobiles, etc. The two-sector economy of classical theory also finds the bulk of the population of India - some 600,000 villages that constitute some 80% of her population - steeped in ancient traditions and folklore, tuned into other wavelengths for motivation and ideals. Often completely unaware of the terms and language of the West, and unashamedly professing their ancient beliefs, they often give a truer picture of the dominating forces of the nation.

The interplay of these two forces may be regarded as the elements of a future synthesis with the heavier bias given to the ancient attitudes which still underlie both sectors of India. Under these conditions, the attitude of the individual consumer of education can be shown to be vital. Assuming freedom of choice, the attitudes of the individual consumer towards education and towards the economic benefits it yields are patently admissible. Even if no freedom of choice exists, we can argue that productivity of resources

going into education is influenced by the satisfaction of its participants.

By offering the effects of education in Delhi (as the capital of India) and "Raajpur," a village with a modern sugar factory, this study attempts to provide a picture of the two forces which must make education work for economic development, if it can be made to work at all. Its significance is precisely in this two-way approach.

Limitations

The exploratory nature of this study into the return to investment in education in India at the national decision-making level and at the village unit level must be stressed.

CHAPTER II

REVIEW OF LITERATURE

It should come as no surprise to the educator that the role of the human being in his own economic development should be of fundamental importance, yet it is precisely this feature that many educators find repugnant and that many economists find surprising. Many educators feel that viewing human beings as human capital, and consequently of treating education as investment in human capital, is basically a materialistic and essentially deterministic point of view. To them, a human being represents a unique set of cultural values, essentially spiritual and humanistic and set apart from the world of commodities, which economics is taken to represent.

Krug complains:

Economic explanations are popular, but necessarily controversial and complex: for example, good times make it possible for youths to go to school, but they also provide jobs to lure them away.... Only rarely is the possibility suggested that more people thought schooling was a good thing in itself. ...still, there has been in American life a quest for culture running side by side with the demand for practical results.¹

Speaking of "An American Tragedy in Education,"

Callahan considers that regardless of the motivation, the

¹Edward A. Krug, The Shaping of the American High School (New York: Harper and Brothers, 1964), pp. 170-171.

consequences of applying business and industrial values and practices to education were tragic. He qualifies this by saying:

Perhaps the tragedy was not inherent in the borrowing from business and industry but only in the application. It is possible that if educators had sought "the finest product at the lowest cost" - a dictum which is sometimes claimed to be a basic premise in American manufacturing - the results would not have been unfortunate. But the record shows that the emphasis was not at all on "producing the finest product" but on the "lowest cost."²

The Concept of Human Capital

Curle dislikes the phrase "'human capital,' which is frequently employed to refer to measures taken to educate the people and to keep them in relative comfort and good health, because it appears to exclude the altruism which is an essential component of social development." He feels that it should be possible to discuss the social aspects of growth in their own right and outside the economic frame of reference, though he seems to be willing to compromise when he adds, "But if it induces people who would not have otherwise done so to consider the part played by human beings, one cannot object too much."³

²Raymond E. Callahan, Education and the Cult of Efficiency (Chicago: The University of Chicago Press, 1962), p. 244.

³Adam Curle, Educational Strategy for Developing Societies (London: Tavistock Publications, 1963), p. 2.

It might, in turn, surprise educators to learn that the mainstream of thought among classical economists held it neither appropriate nor practical to apply the concept of capital to human beings.⁴ John Stuart Mill⁵ once insisted that the people of a country should not be looked upon as wealth because wealth existed only for the sake of people. Alfred Marshall⁶ felt that while human beings were incontestably capital from an abstract and mathematical point of view, it would be out of touch with the marketplace to treat them as capital in "practical" analyses.

On the other hand, in one context or another, classical economists have spoken of the importance of human beings and their training in economic development. Adam Smith⁷ speaks of the value of education from the point of view of law and order, so necessary for systematic economic development. Von Thunen, perhaps the first economist to relate formally the effects of education to labor productivity,

⁴Theodore Schultz, "Education and Economic Growth," in Social Forces Influencing American Education (ed.) Nelson B. Henry (Chicago: University of Chicago Press, 1961), pp. 50-51.

⁵John Stuart Mill, Principles of Political Economy (ed.) Sir W. J. Ashley (London: Longmans, Green and Co., 1929), p. 8.

⁶Alfred Marshall, Principles of Economics, 8th ed., (London: Macmillan and Co., Ltd., 1930), p. 216.

⁷Adam Smith, An Inquiry into the Nature and Causes of the Wealth of Nations, Vol. III, 8th ed. (London: Strahan, Codell and Davies, 1796), pp. 91 et. seq.

saw a definite relationship between an individual's education, his wage and the rate of interest.⁸ He referred to education as what man costs, hence as the capital contained in man. The returns to this capital would be expressed in the larger product of man's labor. He felt society erred by not considering humans, possessors of knowledge and skills, as a form of capital; he felt that the concept of capital applied to man did not degrade or impair his freedom and dignity but rather failure to do so degraded man, e.g., war, where a hundred men may be sacrificed to save one gun, because the purchase of a cannon causes an outlay of public funds, whereas human beings can be had for nothing.⁹

Alfred Marshall, in spite of his opinion that it would be out of touch with the marketplace to treat human beings as capital in practical analyses, emphasized that education was important "as a national investment" and that "the most valuable of all capital is that invested in human beings."¹⁰

What, then, are the reasons for the recent swing to the consideration of education as investment in human capital? As a pioneer in the field, Schultz has produced evidence of

⁸Bernard W. Dempsey, The Frontier Wage, with the text of the second part of The Isolated State by Johann Heinrich von Thunen (Chicago: Loyola University Press, 1960), pp. 333-339.

⁹Ibid., p. 360.

¹⁰Marshall, op. cit., p. 564.

the part that investment in human knowledge has played and is playing in the economic growth of the United States.

In his own words:

But what are the sources of economic growth? A country's natural endowment - labor force and reproducible capital. What is required? The traditional answer is - work and save and manage prudently. Labor and capital become the essential components that can be augmented. But we find that our national income has been increasing at a much larger rate than either the labor force or the stock of physical capital. It would seem that increases in these two components leave much of our economic growth unexplained.

While man-hours rose less than 1 per cent and physical capital less than 2 per cent per annum, the output of the United States economy rose slightly more than 3 per cent per annum between 1919 and 1957.¹¹

The crucial figures in the above estimates are the 3.1 per cent per annum for output and the 1 per cent per annum for total input. Thus, between 1919 and 1957 by adding only 1 per cent to the total input, the economy in its generosity increased real income by a bit more than 3 per cent!

How much is known about the mainsprings of economic growth? Much less than is commonly believed. It is quite apparent from public discussion and debate that we do not really understand the components that have entered into our economic growth. We concentrate on capital and labor with no consideration of the importance of the improvements in the capabilities of labor. Much stress is placed on the formation of capital, and yet human capital is omitted altogether. The omission is serious.

If education is in large part an investment that becomes an integral part of students, we should to this extent treat human beings as capital.¹²

¹¹See Table 2-1, p. 19

¹²Schultz, "Education and Economic Growth," op. cit., pp. 49-50.

TABLE 2-1¹³

Increases in Output and Inputs of the Private Domestic Sector of the United States Economy, 1919 to 1957*

	1919 (Indexes, 1929 - 100)	1957	Increases in Per Cent Per Annum
Output	69.7	225.2	3.1
Input:			
Labor input (weighted man-hours)	86.7	116.9	0.8
Capital input (weighted tangible capital)	80.3	158.2	1.8
Total input (weighted man-hours and capital)	84.9	125.5	1.0

*From Solomon Fabricant, Basic Facts on Productivity Change. Occasional Paper 63, National Bureau of Economic Research, New York, 1959 - Columns 1 and 2 are from Table A which is based on John Kendrick's forthcoming article "Productivity Trends in the United States," and Column 3 from Table 5. These estimates are for what Kendrick calls the "private domestic economy."

For those interested in the exact values of weighting used by Fabricant¹⁴

Labor: Capital = 8:2

So, substituting inputs,

Labor unweighted = 0.8, weighted = $8 \times 0.8 = 6.4$

Capital unweighted=1.8, weighted = $2 \times 1.8 = 3.6$

TOTAL 10.0

Divided by 10 (8 + 2) 1.0

¹³Ibid., p. 50.

¹⁴Ibid., p. 9.

Unfortunately, economists are not united on a theoretical foundation for the economics of education.

Galbraith says:

Economic development in our day has come to be regarded overwhelmingly as a problem in economic analysis. In economic analysis, the role of education is ambiguous. This ambiguity has contributed in turn to doubt and uncertainty as to what comes first.¹⁵

Tinbergen puts it this way:

...our knowledge of the relationship between input of skilled labor and output of goods is almost non-existent. Even the much more modest aim of relating the number of scientists and technologists to total output encounters a number of difficulties which cannot be overcome without much more elaborate study.¹⁶

Groves sums it up:

Those who support an increasingly generous outlay for education as compared with other consumption goods, other forms of capital, and other governmental outlay must still rely in part on an element of faith. But it is faith fortified by more and more evidence and reason.¹⁷

¹⁵John Kenneth Galbraith, Economic Development in Perspective (Cambridge, Mass.: Harvard University Press, 1962), p. 78.

¹⁶John Tinbergen, "The Global Demand for Education in the Underdeveloped Countries," O.E.C.D. Conference on Economic Growth and Investment in Education (Washington: 1961), p. 4.

¹⁷H. M. Groves, Education and Economic Growth (National Education Association, Washington, D.C., 1961), p. 58.

Schultz¹⁸ points to historical precedent to explain the apparent disunity among economists. He shows that where we have assumed "nicely formulated and neatly packaged" theories "ready for research" there actually were "jumbles of ideas." He refers to three major unsettled policy questions that have attracted competent minds with a talent for economic analysis: to wit, the difficulties of growing food domestically in England which led Ricardo and the other English economists to clarify the underlying cost conditions and implications of freer trade; the mass unemployment of the thirties which challenged Keynes in his thinking about economic instability; and the continuing adjustments in resource allocation associated with economic growth in high-income countries in modern times.

Schultz solves the dilemma in the economics of education by making a distinction between the various demands for education. In his own words:

...it will be convenient to classify them as follows: (1) those educational services that are purely for consumption, (2) those that are purely for investment, and (3) those that are intrinsic complements in serving both consumption and investment objectives.¹⁹

¹⁸Schultz, op. cit., p. 52.

¹⁹Ibid., p. 52.

Galbraith applies these distinctions with special force to underdeveloped countries:

A developing country may rightfully regard its outlays for education as an investment.... The new country cannot be...permissive towards those in whom it invests. They are a privileged group who must work to deserve their privileges. The teachers are custodians of scarce national resources which must not be wasted. In short, the developing country must consider its educational system in the light of peculiar requirements of development.²⁰

He emphasizes the need for education from the observed positive correlation of education with economic development:

Nowhere in the world is there an illiterate peasantry that is progressive. Nowhere is there a literate peasantry that is not. Education, so viewed, becomes a highly productive form of investment.²¹

Ginsburg²² supplies statistical evidence for these claims. His figures show that in 1957 there was no country with less than \$300 per capita annual income that had more than 40 per cent literacy. He also shows that there was

²⁰Galbraith, Economic Development in Perspective, op. cit., pp. 57-58.

²¹Ibid., p. 49.

²²Norton Ginsburg, Atlas of Economic Development (Chicago: University of Chicago Press, 1961), pp. 18, 38.

no country with more than \$500 per capita annual income that had less than 90 per cent literacy.

The Marshall Aid Program has been rated a significant factor in the post-war recovery of the nations of Europe. However, Enke²³ poses the question, "How much of this extraordinary outburst of energy and creativity can be attributed to the Marshall Plan?" and indicates that the view that Europe recovered because it was Europe and already possessed an advanced economic culture is gaining acceptance. Be that as it may, similar success was not experienced when the United States began reprogramming its foreign assistance resources for the development of backward countries. Enke goes on to state that nations of an essentially European culture are fundamentally different from many of those in Asia and Africa.

There is no doubt that the failure of economic assistance to produce effects akin to those experienced in Europe brought out the difference in the human material that was being met in non-European countries. Experts in these fields began to attest to the need for improvement in the manpower with which they were working; first technical training and then, as that seemed to have little proportional effect, to speak openly of mass-education, mass-literacy, general cultural values and the like.

²³Stephen Enke, Economics for Development (Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1963), p. 506.

For example, Hoselitz²⁴ offers the proposition that mass literacy improvement and/or expansion of general community services and the formation of social overhead capital for the rural population are preferable alternatives to large-scale education projects which might engender serious political instability in the country concerned. He is uneasy about the recent emphasis on the development of high-talent manpower in some of the developing countries when it might be more important to create productive employment for such manpower.

Nicholls²⁵ finds that the Japanese offer valuable lessons in sound economic development. They showed an early recognition of the importance of such intangibles as the elimination of illiteracy and the application of scientific knowledge to both agricultural and industrial progress.²⁶

One as yet unanswered question concerning the problem of economic growth for underdeveloped nations is the tie-in between culture and education. The next objective seems to be to improve human capital in these countries. Automatically one thinks of education. But how effective is education

²⁴Bert F. Hoselitz, Investment in Education and its Political Impact in Developing Countries prepared for the Conference on Education and Political Development, Lake Arrowhead, Calif., June 1962. Sponsored by the Social Science Research Council, New York.

²⁵William H. Nicholls, "Accommodating Economic Change in Underdeveloped Countries," American Economic Review, Vol. XLIX, No. 2 (May 1959), pp. 156-168.

²⁶W. G. Beasley, The Modern History of Japan (London: Weidenfeld and Nicolson), p. 112.

apart from the culture in which it is imbedded?

Social psychologists such as Kurt Lewin²⁷ tell us that it seems to be easier for society to change education than for education to change society. He carries this analysis further when he states that it is the social situation which determines the dynamic factors of the educational situation, which influence the behavior, the personality and the ideals of the growing child. He sums up:

The degree of pressure under which the child stands is generally more important than any particular educational measure or single educational act.²⁸

Hagen²⁹ spells out the extent of misunderstanding when he says that to assume that the way to bring about changes in attitudes is by education arises in large part from a misunderstanding of how the basic attitudes of personality are inculcated. The influence of school in building on basic attitudes and in providing facts and tools is tremendous, but it should not be assumed to be the major culture molding institution. The technical adviser cannot mold the culture.

It would not be fair to leave the issue of human capital without observing that there is some evidence that the pendulum has begun to swing back towards the view that

²⁷Kurt Lewin, Resolving Social Conflicts (New York: Harper and Brothers, 1948), pp. 3, 4.

²⁸Ibid., p. 4.

²⁹Everett E. Hagen, "A Framework for Analyzing Economic and Political Change," Development of the Emerging Countries (Washington, D.C.: Brookings Institution, 1960), pp. 32, 33.

physical capital is not receiving sufficient attention because of the attention being given to human capital. Yang³⁰ feels that the importance of "human investment" should not be exaggerated to the point where it is regarded as a pre-condition of capital formation needed to achieve sustained growth. He questions whether underdeveloped countries should have to wait until the level of managerial ability and skill is improved to a certain level before they begin to engage in investment in physical capital formation. He goes on to state that the importance of physical capital to the development of underdeveloped countries should not be underrated.

Practical men in the field of development are more apt to concur with the view of Paul Hoffmann, that:

One of the most damaging mistakes of the 1950's was a failure to realize that development cannot proceed without concentrating on an increase in human knowledge and skill. Despite our long traditions of veneration for individual man, we did not take into account his real significance in economic development. We looked at Switzerland and Japan, for instance, and did not see that human ingenuity, capacity and skill had overcome tremendous handicaps of natural resources. It is a mistake no sensible observer will make again.³¹

To return to what Curle stated in his grudging acceptance of the phrase, "human capital" that "if it induces

³⁰E. Hsin Pao Yang, "Capital Supply and Growth," International Economic Association, Economic Development (with special reference to East Asia), (ed.) Kenneth Berrill, (New York: St. Martin's Press, 1964), p. 75.

³¹Paul G. Hoffmann, World Without War (Chatto and Windus, London, 1962), p. 120.

people who would not have otherwise done so to consider the part played by human beings, one cannot object too much."³²

Economists of Education

Since the early 1950's economists have turned to the analysis of problems of developing nations in their efforts to turn their revolutions of rising expectations into reality. In due course, once the first flush of achievement of self-direction and freedom from colonial powers had worn off, and the vast quantities of physical capital channelled into the economies by international funds, and the funds of wealthier nations had been absorbed, the question of improved manpower has arisen. In this has come anxious surveillance of educational training for possibilities of change. Some economists have stood out in their relationship to this development. They have turned from other pursuits, often closely allied to the question of the development of these nations, and have begun to look afresh at education.

Theodore W. Schultz

A giant in the field of human capital, Theodore Schultz, famous for his work in the field of American education for economic development, has turned his energy and attention to the question of development in underdeveloped nations.

His words on the matter of human capital development are worth repeating in full. Taken from his presidential

³²Curle, op. cit., p. 2.

address at the meeting of the American Economic Association in 1960, they are:

My last policy comment is on assistance to under-developed countries.... Here..investment in human beings is likely to be underrated and neglected. It is inherent in the intellectual climate in which leaders and spokesmen of many of these countries find themselves. Our export of growth doctrines has contributed. These typically assign the stellar role to the formation of non-human capital, and take as an obvious fact the super-abundance of human resources. Steel mills are the real symbol of industrialization New funds and agencies are being authorized to transfer capital for physical goods to these countries. The World Bank and our Export-Import Bank have already had much experience. Then, too, measures have been taken to pave the way for the investment of more private (non-human) capital abroad. This one-sided effort is underway in spite of the fact that the knowledge and skills required to take on and use efficiently the superior techniques of production, the most valuable resource that we could make available to them, is in very short supply in these underdeveloped countries. Some growth of course can be had from the increase in more conventional capital even though the labor that is available is lacking both in skill and knowledge. But the rate of growth will be seriously limited. It simply is not possible to have the fruits of a modern agriculture and the abundance of modern industry without making large investments in human beings.³³

Schultz' qualifications for leadership in the field of human capital, if only in the United States, stem from his analysis of information presented by national sources and economic data collected over the last half-century. He also possesses the fortitude to approach the educational profession with the strength of his convictions in the field

³³Theodore Schultz, "Investment in Human Capital," American Economic Review (March, 1961), p. 11.

of economics and agricultural problems, and to leave the inside workings of education to the members of that profession:

I am aware that an essay on the economic value of education will seem presumptuous to many school people and to some school economists. Those who value schooling highly, which includes most of those who are a part of the educational establishment, are likely to look upon an effort such as this as an intrusion which can only debase the cultural purposes of education. In their view education lies beyond the economic calculus, because they believe that education is much more than a matter of costs and returns. To speak of schooling as an investment is to imply that it is something material. The notion of "efficiency" is a red flag in most school circles and often for good reasons when it is implied that an efficiency expert from business or a foundation is qualified to evaluate teaching and learning.³⁴

Schultz emphasizes that he is on the side of education and understanding of its problems:

It will become clear that there are important economic dimensions to education that have not been fully recognized and that these dimensions augment substantially the value traditionally attributed to schooling and to on-campus research.³⁵

Schultz tells us that as a Fellow in a Research Project he became curious as to the unexplained residual in economic development. Eventually he came to the view that it was in

³⁴Theodore Schultz, The Economic Value of Education (New York: Columbia University Press, 1963), p. viii.

³⁵Ibid., p. ix.

man himself that this residual had its roots and thus arrived at the concept of education as a theme of economic research.³⁶

Schultz begins his analysis by pointing out that between 1919 and 1957 the output of the American economy grew at the rate of 3 per cent per annum, while the resources put into the economy expanded at the rate of only 1 per cent per annum.³⁷ Using official documents, he presents information regarding the differences between education vis-a-vis the economy in 1900 and education vis-a-vis the economy in 1957. He notes greater effort going into education. In terms of enrollments, he observes the ratio of post-elementary to elementary in 1900 to be 6 per cent, while the ratio of post-elementary to elementary in 1956 was 40 per cent. In terms of teachers, the ratio of teachers to the total labor force was 1.86 per cent in 1900, while in 1956 the ratio of teachers to the total labor force was 2.34 per cent. Both elements implied greater resources and higher costs going into education, since the upper levels of schooling are more costly, and the wages of teachers do not decline with larger numbers being employed.

³⁶Schultz, The Economic Value of Education, op. cit., p. viii.

³⁷Infra., p. 19.

He notes greater costs in education. In terms of enrollments, he observes the ratio of total costs of elementary education as compared to all schooling costs to be 58 per cent for 1900 and 27 per cent for 1956, while at the same time the total costs of education at all levels rose from 2.9 per cent of total consumer incomes in 1900 to 10.3 per cent of total consumer incomes in 1956. More was being spent on education at all levels, and the greater share was now going to higher rather than elementary education.

In his assessment of the value of education in the American economy, Schultz seized on a concept from theoretical economics, "opportunity cost," and translated it in terms of education into "foregone income," i.e., what students might have earned at going rates of pay if they had not chosen to attend school. He estimated that elementary school pupils did not have any significant foregone income, while foregone income of high school pupils was an estimated \$3,408, college students an estimated \$7,788 for four years, and graduate students an estimated \$5,841 for three years. He adds foregone income to estimated direct school costs to obtain total cost.

Schultz attempts to include in his analysis some notion of quality of education with the concept of "equivalent school years." Taking 1940 as the base year, he estimated the number of days per year attended and the number of years of school attended by the average person. He shows

on this basis that the average member of the labor force in 1900 had 4.14 years while the average member of the labor force in 1957 had 10.75 years of schooling.

Using cost estimates, Schultz estimates the costs of education in 1900 and 1956, and terms these costs an investment in human capital. He estimates that in 1900 the whole population carried in its persons an investment of \$114 billion and in 1957 the whole population carried in its persons an investment of \$848 billion in 1956 prices. He gives some further ideas as to the magnitude of this investment when he compares the amount of investment in human capital contained in the labor force with the amount of investment in physical capital in 1900 and 1957. For 1900, human capital investment in the labor force was \$63 billion, while physical capital investment in the labor force was \$282 billion, bringing the percentage of human capital investment as compared to physical capital investment to 22 per cent. For 1957, human capital investment in the labor force was \$535 billion, while physical capital investment in the labor force was \$1,270 billion, bringing the percentage of human capital investment as compared to physical capital investment to 42%.

These economic estimates are revealing as to the implications of the vast transformation of educational systems in industrialized nations.³⁸ They reveal what may

³⁸A. H. Halsey, Jean Floud, and C. Arnold Anderson (eds.), Education, Economy and Society (Glencoe, Ill.: Free Press, 1961), pp. 51, 52.

be called the macro effect of education, i.e., the effect of education on the whole economy rather than on any one segment or one individual as compared to other segments or individuals in the society. This does not assume that no individual gained any private benefit from his education in terms of his income above what others with less schooling earned.

With characteristic energy and with a flair for painting in large bold strokes, Schultz applies his conclusions to underdeveloped nations:

From this experience one may infer that poor countries, even when they are no less poor than were the people of the United States in 1900, will find that most of the real costs of secondary education are a consequence of the earnings that students forego while attending school.³⁹

He is prepared to speak of "earnings foregone" at an earlier level for relatively underdeveloped countries. He believes that some earnings are foregone after the fourth and fifth year of school in these countries.⁴⁰

Schultz attributes the puzzles and paradoxes that are presented by the economies of the world's underdeveloped countries to a failure to understand the importance of

³⁹Theodore Schultz, "Capital Formation by Education," Journal of Political Economy, Vol. 68 (December 1960), p. 582.

⁴⁰Schultz, The Economic Value of Education, op. cit., p. 30.

investment in human beings through education, training and health activities. He cites the cases of Mexico, Israel, Puerto Rico, and USSR, Denmark, Germany and Japan as countries that have balanced investments between human and physical capital and have achieved rapid rates of economic growth. He gives examples of some of these paradoxes and puzzles: the failure of the poorer countries to achieve more rapid growth than they have, the slow rate of absorption of physical capital into these countries, and the emphasis placed on non-human capital at the expense of human capital investment.⁴¹ Schultz feels that this human investment carries radical implications for our way of thinking about the rest of the world. It implies less investment in steel mills and large industrial plants in the underdeveloped countries and more investment in the people of these countries.⁴²

It is small wonder that educational economists have come to be affected by the Schultztian approach and findings.

W. Arthur Lewis

W. Arthur Lewis seemed to be opposed to the Schultztian method, when he said:

⁴¹Theodore Schultz, "Investment in Human Capital in Poor Countries," Foreign Trade and Human Capital (Dallas, Texas: Southern Methodist University Press), pp. 3-15.

⁴²Theodore Schultz, "Human Wealth and Economic Growth," The Humanist, Vol. XIX, No. 2 (1959), pp. 71-81.

Some confusion has been caused by applying to these countries the conclusions of statisticians who try to measure the yield of education in rich countries, and emerge with such conclusions as that the yield of investment in humans exceeds the yield of investment in physical resources.... To attribute all improvements in productivity to education would therefore be more than a little naive.⁴³

Lewis's background seemed well-established in the classical economic tradition with no explicit place for education, as witness his epochal article, "Economic Development with Unlimited Supplies of Labour," written in the classical tradition, making the classical assumption, and asking the classical question.⁴⁴ As Lewis himself explains:

The classics, from Smith to Marx, all assumed, or argued, that an unlimited supply of labour was available at subsistence wages. They then enquired how production grows through time. They found the answer in capital accumulation, which they explained in terms of their analysis of the distribution.⁴⁵

In this article, Lewis goes on to speak of the two-sector underdeveloped economy, where the agricultural subsistence

⁴³W. Arthur Lewis, "Education and Economic Development," Social and Economic Studies, X, 2 (June 1961), pp. 113-114.

⁴⁴W. Arthur Lewis, "Economic Development with Unlimited Supplies of Labour" (The Manchester School, May 1954). Reprinted in The Economics of Underdevelopment (eds.) A. N. Agarwala and S. P. Singh (New York: Oxford University Press, 1963), pp. 400-448.

⁴⁵Ibid., p. 400.

sector provides the industrialized capitalist sector with unlimited supplies of labor at subsistence wages (or virtually subsistence wages with the slightly higher wages in the cities to compensate for the slightly higher level of prices). The unlimited quantity of labor ensures minimum wages and makes possible the Marxist surplus of profit from labor, which in turn makes possible maximum savings in the hands of industrialized capitalists, who plow back surplus profits into the economy. As late as 1961, Lewis made the comment that "teaching an African cook to read may increase his enjoyment of life, but will not necessarily make him a better cook."⁴⁶

Since Lewis became involved in UNESCO activities and particularly with African problems,⁴⁷ he has apparently been influenced by the problem of elementary graduate unemployment and underemployment in the new African States. He demonstrates the difference in costs of education in a newly independent African country, Nigeria:

To give eight years of primary education to every child would cost at current prices about 0.8 per cent of the national income in the U.S.A...and 4.0 per cent in Nigeria. The main reason for this wide difference is that, while the average salary of a primary school teacher is less than 1½ times per

⁴⁶W. Arthur Lewis, "Education and Economic Development," Social and Economic Studies, Vol. 10, No. 2 (June 1961), p. 113.

⁴⁷W. Arthur Lewis, Secondary Education and Economic Structure (Princeton: Princeton University, 1964), p. 227.

capita national income in the U.S.A., a primary school teacher gets...seven times (the per capita national income) in Nigeria. If the cost of education is to be kept within taxable capacity, widespread provision of education belongs to a stage of development where the premium for education has already diminished to reasonable proportions.⁴⁸

Lewis then goes on to devise a formula for calculating the proportion of the population which should be in secondary education based on the job opportunities available in the economy.

$$x = \frac{n(a + b + c)}{m}$$

x = proportion of age cohort to be recruited
n = ratio of number of secondary type jobs to adult population
m = ratio of number of age cohort to adult population
a = normal percentage of wastage of nationals
b = abnormal wastage due to replacement of expatriates
c = percentage of rate of growth in number of secondary type jobs.⁴⁹

Lewis has lately proposed a formula which uses "the stock rather than the enrollment percentage since, if there is a relationship with economic structure, what matters must be the stock rather than enrollment in any one year."⁵⁰

⁴⁸Lewis, Education and Economic Development, op. cit., p. 116.

⁴⁹Ibid., pp. 118-119.

⁵⁰Lewis, Secondary Education and Economic Structure, op. cit., p. 219.

$$s = \frac{0.68mN(1+p) + (p+d+a) xN}{n}$$

$$= \frac{0.68m(1+p) + (p+d+a) x}{b}$$

where

- a = adjustment for accelerated education.
- b = "birth rate," $n + N$.
- d = death rate of educated males aged 25 and over.
- m = absolute change in income from one year to the next.
- n = number of males aged 25.
- N = number of males aged 25 and over.
- p = rate of growth on N.
- s = proportion required in school at age 15.⁵¹

He also presents a graph showing the relationship between education and non-agriculture. He agrees that "as an exercise in regression and analysis, this investigation is clearly a non-starter, but when the figures are examined in the light of what is generally believed about these countries, the line we have drawn inspires a moderate degree of confidence. If a traditional relationship exists between education and economic structure, this is probably it."⁵²

Lewis sums up the relationship between education and economics in these words, "While education helps to change economic structure, it is also true that the structure of the economy imposes its own limits to what education can achieve,"

⁵¹Ibid., p. 223.

⁵²Lewis, "Economic Development with Unlimited Supplies of Labour," op. cit.

which seems a long way from the classical economist who dealt with labor in terms of subsistence levels⁵³ and spoke of education in terms of knowledge, which he discussed in historic phases. As he adjusts to the current situation in the developing countries where people are interested in education, he warns that "whether a rich country can afford to do so (keep its children in school up to age 16) is a question not of economics but of social values."⁵⁴

John Vaizey

Another approach to the problem has been that of John Vaizey. Coming to the field from the direction of day-to-day cost-benefit studies in the British Ministry of Education, which he found too short-sighted, Vaizey accepted the importance of general overall economic planning. He gives the example of detailed analyses of the future of British education, on a day-to-day basis, failing to make allowance for the increase in the birthrate that flooded British schools after the war.⁵⁵

Vaizey has since laid many a shibboleth to rest, as he

⁵³W. Arthur Lewis, The Theory of Economic Growth (London: George Allen and Unwin Ltd., 1955), pp. 164-200.

⁵⁴Lewis, Secondary Education and Economic Structure, op. cit., p. 227.

⁵⁵John Vaizey, The Economics of Education (London: Faber and Faber, 1962).

worked through UNESCO, showing the broad difficulties involved in many a proposed assumption and solution. He is opposed to a blanket order on education as the means to economic growth. He says:

...education is not the golden key to growth - if it were, India and Egypt would be much richer than they are, especially since Egypt has many more graduates per head of the population than England.⁵⁶

He is strongly opposed to the notion of external aid for education.

...the UNESCO report of 1960 that "the only solution (to aid education in underdeveloped countries) is to harness external assistance for certain parts of the programme" is preposterous.⁵⁷

For one thing, he feels that external aid could never be large enough to cover all the needs of such a program. He then considers the financial shock to the economic framework of such a society. He finds particular anomaly in the fact that it was at the Karachi talks that members of underdeveloped nations spoke for massive foreign aid for their educational needs, in the very capital of a country that rejects such aid. He goes on:

The UNESCO...view that it is "a fundamental human right" to have free primary education...is even more absurd. It is not and never has been so; and

⁵⁶Ibid., p. 128.

⁵⁷Ibid., p. 147.

by saying it should be so not one step is achieved which will bring a single child into a single class.⁵⁸

However, Vaizey agrees that education can achieve increased productivity, and cites the Russian example:

The value of education as a means of raising productivity was clearly demonstrated in the U.S.S.R. in the 1920's. In 1924 the Gosplan carried out an investigation of the economic effects of the ten-year plan for the development of the schools. It was estimated that the work of people who had received primary education was almost one and a half times more productive than that of illiterate workers of the same age doing the same work; and that the work of those who had received secondary education was twice as productive, while that of graduates was four times as productive. It was concluded that the entire cost of extending the school network was covered by the increase in productivity thus achieved - and that within the ten-year period of the plan.⁵⁹

At the same time he objects to the Schultz diagnosis of the effects of education, in that it assumes:

...a perfectly rational system of needs and rewards, whereas while we do have discrepancies in the Western world, with social patterns skewing the economically rational patterns, the non-Western world is completely illogical by way of comparison with Western countries. Result - we are applying a measure that has to be adapted for Western conditions, but cannot be applied to non-Western conditions.⁶⁰

⁵⁸Ibid., p. 134.

⁵⁹Stanislas Stroumiline, "La Planification en U.S.S.R.," Editions Sociales, Paris, 1947. Quoted in John Vaizey, "Some of the Main Issues in the Strategy of Educational Supply" (Chapter III), p. 51, The Challenge of Aid to Newly Developing Countries (Vol. III). Policy Conference on Economic Growth and Investment in Education (Washington, D.C.: Oct. 16-20, 1961). Organization for Economic Cooperation and Development (Paris, 1961).

⁶⁰Vaizey, op. cit.

Vaizey considers education to be "probably one of the easiest forms of development which can be undertaken by a poor country."⁶¹ At the same time, he goes into the workings of the situation and examines some dilemmas. For example, political considerations favor emphasizing primary education first, but economic development will proceed more rapidly if secondary education is given prior attention, if only to provide teachers for primary schools. Similar conflicts exist between regional imbalances in education (Vaizey gives the example of Pakistan) and between urban and rural education, where overall greater improvement might come about by purposeful concentration on imbalanced development at first.

Another vignette of the Vaizeyan demolition of existing topics of conventional wisdom is found in his views on teacher salaries. Vaizey advances the interesting idea that it is precisely this economic burden which is so self-defeating. He pleads for anything but economic considerations in the day-to-day workings of educational processes.

An economist should suggest, perhaps, that money would be a helpful way of encouraging new recruits. Raising the pay of teachers is a most effective barrier, however, to the quick development of education.... Only some sense of national drive can in fact overcome this difficulty at all rapidly.

⁶¹John Vaizey, "Some of the Main Issues in the Strategy of Educational Supply" (Chapter III), p. 53, The Challenge of Aid to Newly Developing Countries (Vol. III). Policy Conference on Economic Growth and Investment in Education (Washington D.C.: Oct. 16-20, 1961). Organization for Economic Cooperation and Development (Paris, 1961).

Religion, Communism and nationalism can make graduates go into the village schools.⁶²

Frederick H. Harbison

Another approach has been that of Harbison with his concept of manpower strategy. He considers a manpower analysis essential before designing a realistic human resource development strategy within the framework of "imperatives" and "constraints."⁶³ Imperatives are sharp increases in savings for reinvestment, combined with emphasis on industrial development and improved agriculture. Investment must be in human and real capital, which are mutually dependent, and must be given equal priority. Constraints are rapidly rising populations, unbalanced rural-urban migration, desires for immediate improvements in standards of living, irresistible pressures on education, and dependence on more advanced nations for aid. Behind all these constraints lie the societal resistances in the form of vested interests.

Manpower problems are shortages of skilled manpower coupled with a surplus of unskilled manpower. Highly educated manpower is scarce, and even more critically short is the lack of sufficient numbers of sub-professional personnel,

⁶²Vaizey, The Economics of Education, op. cit., p. 130.

⁶³F. H. Harbison, "The Strategy of Human Resource Development in Modernizing Economies" (Chap. I), pp. 9-32. The Challenge of Aid to Newly Developing Countries (Vol. III). Policy Conference on Economic Growth and Investment in Education (Washington, D.C., October 16-20, 1961) (Paris: Organization for Economic Cooperation and Development, 1961).

teachers and craftsmen. These can be imported, developed in employment and developed through formal education. Innovation needs large doses of strategic human capital. In most countries, the rate of increase in scientific and engineering personnel needs to be three times that of the labor force; sub-professional, six to nine times that of the labor force, clerical personnel and craftsmen twice that of the labor force, and managerial talent at a rate comparable to the increase in the labor force.

Labor surpluses include unskilled and untrained manpower, unproductive agricultural labor in overpopulated countries such as Egypt and India, "unemployed intellectuals" who are unemployed because they consider available work beneath their status, and those thrown out of work because of newer processes.

Harbison's strategy of human resource development has three essential components:

- a. The building of appropriate incentives so that compensation to an individual is related to the importance of his job in the modernizing society. Examples are paying more to agricultural officers and village workers than for professionally trained people with desk jobs in the cities; science and mathematics teachers urgently needed in secondary schools should be paid more than less urgently needed teachers even though they are university graduates.

- b. The promotion of effective training of employed manpower so that the potentialities of government agencies, private employers, expatriate firms and foreign technical experts as trainers and developers of manpower are more fully utilized. The government, as the largest employer, should take the lead in shouldering this responsibility. Foreign-owned enterprises can be powerful instruments of human capital formation if handled properly. Technical assistance should be used as a training medium, so that the purpose of technical assistance should be to train one or more nationals to do work previously done by a foreigner.
- c. Formal education, whose essential function is to prepare people for training rather than to train people for particular occupations. The main problem in primary education is to keep down its cost and the need is to find new techniques which can be utilized effectively by large numbers of teachers who themselves have had little more than primary education and which can maximize the strategic services of a very small group of more highly trained personnel. At the secondary level, the main consideration is to provide high-quality education for an ever-increasing minority of the school-age population, as the secondary school leavers constitute the main reservoir from which

"trainable" high-level manpower must be drawn.

The mission of higher education is two-fold:

- a) to provide liberally educated persons for positions of leadership in the modernizing society; and
- b) to develop high-level technical manpower.

Harbison feels that his plan to gear remuneration of jobs, particularly in the government service, to their relative importance to the country's development will solve the problem of the artificially overestimated value given to university degrees. Students would then have an incentive to enter the intermediate technical training institutions, secondary teachers' colleges, and scientific and engineering faculties in the universities. He calls for the training of a new type of specialists, strategists in human resource development, a "person who would combine political insight with a rational understanding of the processes of modernization and who are able to comprehend the inter-relationships between the component parts of an intricate program for accelerated development."⁶⁴

As an example of such research, Harbison and Myers have constructed a series of levels of educational development, which are reminiscent of Hostow's Stages in Economic Development. Development of education then follows the patterns set within each level, ranging from narrowly based

⁶⁴Ibid., p. 33.

pyramid structures to broadly based pyramid structures, depending on the future needs of the economy.⁶⁵

An interesting feature in this series of levels of educational development is the position given India. India is placed in the third category, out of four, in this judgment based on economic-cum-educational qualifications, although it places next to the bottom of the last category among Rostow's stages of economic development which is based on per capita incomes.⁶⁶

Adam Curle

Adam Curle presents a blend of the politics and economics of education in his examination of the effects of politics on the economy of countries through the means of their educational systems.⁶⁷ He brings out the changing role of education.

...in most societies for most of recorded time, education has been a reactionary force rather than a progressive one. Education, often closely associated with religion, has tended rather to hallow antiquity than to promote innovation.⁶⁸

He presents an historical background to the role of education:

⁶⁵Frederick Harbison and Charles A. Myers, Education, Manpower and Economic Growth (New York: McGraw Hill Book Co., 1964).

⁶⁶Ibid., p. 47.

⁶⁷Adam Curle, "Education, Politics and Development," Comparative Education Review, Vol. 7, No. 3 (February, 1964), pp. 226-245.

⁶⁸Ibid., p. 226.

To the modernizers, education is a means of actualizing more and more of the world's potential brain-capacity, of bringing this great semi-tapped resource to bear upon the world's problems. ...in nineteenth century Europe. The drive to establish new types of political entity was closely associated with the founding of national education systems.... Thus, in Europe especially, the innovating element in education was closely associated with its social role. Where its function was egalitarian, it stimulated growth; where oligarchical, it buttressed the status quo.⁶⁹

Curle concluded from examination of correlations between education, politics and development that none of the relationships between rates of economic growth and either investment in education or post-primary enrollment ratios had any statistical significance. In fact, he states:

the average investment in education of the ten countries which had the lowest rate of economic growth was slightly higher than that of the twelve which had the highest - and both were above the mean.⁷⁰

He admits, though, that it is not inconceivable that "with the global absence of relationships there are similarities, often to be defined in terms of political ideology and economic development in smaller groups of countries."⁷¹

His analysis of countries under the categories of their political and economic systems is illuminating. He divides them according to the qualities of competitive and

⁶⁹Ibid.

⁷⁰Ibid., p. 230.

⁷¹Ibid.

egalitarian, and their opposites. This gives four combinations. He shows that politically competitive and egalitarian countries are among the richest in the world, while the situation is mixed for the opposite group of countries which are non-competitive and non-egalitarian.

For our purposes, India is in the politically competitive and non-egalitarian camp. Curle states that about 40 per cent of her population is denied a large measure of social mobility because of caste, and the effects of denying to the country full use of its reservoir of brainpower cannot but be enormous.⁷² He goes on to compare India with Communist China, which is placed under the category of politically non-competitive and egalitarian.

Starting from approximately the same economic base as India, per capita income has increased between 1950 and 1959 by 100 per cent: in India by only 12-15 per cent. Over the same period absolute real investment in China was quintupled, and in India only doubled. These differences can, of course, be explained in many ways. But in no sense can they be said to represent any insuperable superiority of the democratic system, especially if flawed by inequalities. It is noteworthy that the immense economic growth has been accompanied by an equally dramatic educational expansion.⁷³

Curle seems to summarize much of his thinking when he considers that it is very hard to isolate specifically educational factors from political, social, economic and other elements

⁷²Ibid., p. 235.

⁷³Ibid., p. 245.

in the growth process.⁷⁴

Other Economists of Education

Barbara Ward, international economist, asked the question "How can manpower and savings be found for the most decisive element of all in infra-structure: the building up of educated manpower?"⁷⁵ She goes on to observe that it is from government in our day that most of the infra-structure comes, but she questions the financing of this infra-structure, which can create special problems.

Housing and schooling do not give a quick return in economic terms, essential as they may be. Their contribution to the economy in better skills, health and habits of work take time to mature. Meanwhile if too much current capital has gone into such social services, government might find itself with no money left to finance immediate...income earners in other fields. It is a difficult question of balance, and false calculations are all too easy.⁷⁶

She has interesting ideas on India, and advocates a one per cent tax levied on the Atlantic Community of Nations to mount a Marshall Aid Program to help India break out of the vicious spiral of low income and low savings.⁷⁷ She tells us that one per cent of national income of these rich

⁷⁴Ibid., p. 244, References under 1.

⁷⁵Barbara Ward, The Rich Nations and the Poor Nations (London: Hamish Hamilton, 1962), p. 75.

⁷⁶Ibid., pp. 94, 95.

⁷⁷Barbara Ward, India and the West (London: Hamish Hamilton, 1961).

countries would give India 2,000 million pounds sterling (about \$5.6 billion) over a period of five years, while Marshall Aid gave Europe 4,000 pounds sterling (about \$11.2 billion) in four years.

Regarding Indian education, Ward feels that "the danger signals (pupil crowding...relatively poor rates of pay for teachers, with unsatisfactory results) should not be exaggerated. Education enlarges the number of jobs... being done by skilled people."⁷⁸

Mary Jean Bowman broaches several questions about education and economic development in emerging countries including a plea for more basic information in the form of "grubbing" rather than theoretical interpretations.⁷⁹ Effective research on the role of education in social change calls for versatility in methods and broad competence. Skill in the more sophisticated mathematical techniques comes at the bottom of the list. Well oriented "grubbing" is more essential. In fact she felt that, "in its (relevant data) absence, tacit estimates of rates of return by anonymous officials will often guide or misguide decisions."⁸⁰ She has an interesting opinion that:

⁷⁸Ibid., p. 155.

⁷⁹Mary Jean Bowman and C. Arnold Anderson, "The Role of Education in Development," Development of the Emerging Countries, Vol. 72, No. 5 (Oct. 1964) (Washington, D.C.: Brookings Institute, 1962), p. 161.

⁸⁰Mary Jean Bowman, "Converging Concerns of Economists and Educators," Comparative Education Review (Vol. 6, No. 2), October 1962, pp. 111-119.

the fantastic inefficiency of the early land-grant colleges, an inefficiency that lasted well over a generation in many of them, may have been the most efficient conceivable way for them to form human resources for economic growth.⁸¹

Bowman has recently published a critique of Schultz and Denison, claiming that "both these studies have been widely quoted and misquoted, and all too often misused, around the world"⁸² and feels that a reassessment is in order. In particular, she indicts Schultz and others for the misapplication of internal-rate-of return measures to problems to which they are inappropriate.⁸³ She goes on to say that "this particular confusion is one of whole genus that often plagues conferences and discussions of problems in applied economics."⁸⁴ She feels that "Schultz's work suggests the order of magnitude of what has been invested in human versus physical capital. But this aspect of his work tells us nothing about the critical decisions themselves."⁸⁵

Among the authors of projections of educational needs are Tinbergen and Bos of the Netherlands Economic Institute. They emphasize that their presentation was not a projection based on past trends but "target figures expressing desirable

⁸¹Ibid., "The Land-grant Colleges and Universities in Human Resource Development," Journal of Economic History (Vol. 12, No. 3), p. 546.

⁸²Ibid., "Schultz, Denison, and the Contribution of 'Eds.' to National Income Growth," Journal of Political Economy (Vol. 72, No. 5) Oct. 1964, p. 450.

⁸³Ibid., p. 453.

⁸⁴Ibid.

⁸⁵Ibid., p. 462.

future levels of educational activity."⁸⁶

Tinbergen and Bos based their estimates of secondary and higher student enrollment on the following assumptions for the 1957-1970 period: Rosenstein-Rodan's population projections by major regions; increase in per capita income of 2 per cent per year; increases in enrollment ratios for higher education related to current per capita income (ranging from 2 to 6 per cent per annum); a trebling of science and technology enrollment ratios in Africa and doubling in Asia and Latin America; and increases in general and vocational enrollment ratios (ranging from 2-6 per cent per annum). Projections of university teacher requirements are based on the assumed growth in the student body. The authors observe that:

The underdeveloped countries will be unable to increase from their own resources the number of university teachers by (the required) 120,000 during the next decade.... If (teacher training institutes and colleges) were to supply half of the required gross increase in secondary school teachers, the number of pupils at these teacher training institutes would have to increase...from about 130,000 to 470,000 for the whole underdeveloped world.

In other words, in order to raise the number of students in secondary education by about 80 per cent between 1958 and 1970, the facilities for teacher training would have to increase by well over 250 per cent. ...(The) number of (teacher training institutes) would have to increase from about 7,000

⁸⁶ Jan Tinbergen and H. C. Bos, "The Global Demand for Higher and Secondary Education in the Underdeveloped Countries in the New Decade" (Chap. IV), pp. 71. The Challenge of Aid to Newly Developing Countries (Vol. III), Policy Conference on Economic Growth and Investment in Education, Washington, D.C., Oct. 16-20, 1961. Organization for Economic Cooperation and Development, Paris, 1961.

in 1958 to 16,000 in 1965 and to 13,000 in 1970 for the three underdeveloped regions.⁸⁷

The Concept of an Underdeveloped Country

Paul G. Hoffmann paints an impressionistic word picture of an underdeveloped country:

Everyone knows an underdeveloped country when he sees one. It is a country characterized by poverty, with beggars in the cities, and villagers eking out a bare subsistence in the rural areas. It is a country lacking in factories of its own, usually with inadequate supplies of power and light. It usually has insufficient roads and railroads, insufficient government services, poor communications. It has few hospitals, and a few institutions of higher learning. Most of its people cannot read or write. In spite of the generally prevailing poverty of the people, it may have isolated islands of wealth, with a few persons living in luxury. Its banking system is poor; small loans have to be obtained through moneylenders who are often little better than extortionists. Another striking characteristic of an underdeveloped country is that its exports to other countries usually consist almost entirely of raw materials, ores or fruits or some staple product with possibly a small admixture of luxury handicrafts. Often the extraction or cultivation of these raw material exports is in the hands of foreign companies.⁸⁸

In practice the United Nations considers any country underdeveloped "in which per capita real income is low when compared with the per capita real income of the United States of America, Canada, Australia, and Western Europe."⁸⁹

⁸⁷ Ibid., p. 71-81.

⁸⁸ Paul G. Hoffman, "One Hundred Countries - One and One Quarter Billion People," (Washington, D.C.: Committee for International Economic Growth, 1960), p. 14.

⁸⁹ United Nations, Department of Economic Affairs, Measures for the Economic Development of Under-Developed Countries (New York, 1951), p. 3.

It thus classified as underdeveloped all of Africa, tropical South America, Central America, and the Caribbean, Asia other than Japan and the Asiatic U.S.S.R.) and the Pacific Islands. The population of these lands is calculated at 66.5 per cent of the world's population (by the year 2000, it will have risen to 76.3 per cent).⁹⁰

India as an Underdeveloped Nation

The information presented in this section is intended to demonstrate that India does indeed come under the definition of an underdeveloped country as defined above. The most obvious meaning of poverty is low income per capita. Table 2-2 includes India among the 657 million persons in Asia and Micronesia where more than three-fourths of the 71 per cent of the population of the world earning under \$100 per capita per annum is found. Enke⁹¹ warns us not to take these estimates at their face value:

not only are they usually based on very dubious and sparse data, but their conversion into dollars at official exchange rates is questionable.

He also cites other inherent difficulties in comparing incomes per capita.⁹² Among them are diminishing returns to

⁹⁰International Labor Office (U.N. Document E/3245), Report by the Director General, Geneva, 1959.

⁹¹Stephen Enke, Economics for Development, Englewood Cliffs, N. J.: Prentice-Hall, Inc., 1963, p. 17.

⁹²Ibid., pp. 42-43. Here diminishing returns to increments in income refer to amounts of satisfaction that added amounts of income provided. Enke makes the point with the example that a Canadian with \$1,000 is not ten times better off than an Indian with \$100.

TABLE 2 - 2

Income Per Capita of the Underdeveloped World: 1959*

	Asia and Micronesia		Sub-Sahara Africa	
	Popu- lation (millions)	Terri- tories	Popu- lation (millions)	Terri- tories
Under \$100	657	16	146	23
\$100-199	33	4	17	1
\$200-299	12	7	1	1
\$300-699	-	-	-	-
	702	27	164	25

	Near East and North Africa		Latin America and Caribbean	
	Popu- lation (millions)	Terri- tories	Popu- lation (millions)	Terri- tories
Under \$100	22	4	7	3
\$100-199	69	5	94	9
\$200-299	10	2	50	6
\$300-699	4	3	45	6
	105	14	196	24

<u>Totals</u>			
	Popu- lation (millions)	Percentage of Population	Terri- tories
Under \$100	832	71	46
\$100-199	213	18	19
\$200-299	93	7	16
\$300-699	49	4	9
	1,177	100	90

Principal Source: United Nations, Demographic Year Book, 1961.*Enke, op. cit., p. 18.

increments in income; differences in income which can be explained as unnecessary because of social and climatic needs; the fact that international rates of exchange reflect the prices of goods that are traded internationally; expenditures such as national defense, which do not add to satisfactions directly; and finally, and most important, whole sections of underdeveloped countries are not monetized and hence are not reflected in prices.

It is also informative to compare the intake and availability of food in the poorer countries. Table 2-3 gives data on average calorie intake, but it should be noted that average calorie intake does not reflect the fact that diets in backward countries lack many of the body building foods such as meat, fish, dairy products and eggs. Here too, of course, climatic and labor requirements play a part in the required amounts of calorie intake for health and productivity. Religious taboos affect the composition of sources of diet, e.g., the relative lack of pigs in a Muslim country such as Egypt (1534 people per pig).

Indian religious taboos are also reflected in Table 2-3. Intake of protein of animal origin is 6 per cent, the lowest of any nation. Kilograms of meat available per capita annually is 2, also the lowest for any nation. Likewise, consumption of eggs is negligible. Fish consumption is at one kilogram per capita annually, again a negligible amount. Hindu taboos against the eating of living organisms

TABLE 2 - 3

Intake and Availability of Food: 1959*

	Calories per capita per day	Protein of animal origin (%)	<u>People per animal</u>		
			Cows	Pigs	Sheep
<u>Latin America</u>					
Argentina	3040	52	.4	4.6	.3
Brazil	2500	20	.7	1.2	2.6
Ecuador	2230	18	.2	3.0	2.1
Guatemala	-	-	2.4	6.9	3.5
Mexico	2330	20	1.6	3.7	6.0
Peru	-	-	2.0	2.0	.4
Venezuela	2300	27	.7	2.0	-
<u>Asia</u>					
Burma	-	-	.6	4.8	50.7
India	2080	6	2.8	88.8	11.2
Japan	2210	18	30.0	42.0	108.0
Fed. of Malaya	-	-	-	-	-
Pakistan	1930	-	3.9	-	14.0
Thailand	-	-	5.0	6.3	-
<u>Africa & Near East</u>					
Egypt	2650	13	19	1543	21
Ghana	-	-	18	-	15
Guinea	-	-	-	-	-
Iran	-	-	37.1	-	1
Iraq	-	-	-	-	.7
Lybia	2180	10	-	-	.9
Tanganyika	-	-	1.1	-	3.0
R.S. Africa	2580	30	1.3	-	.4
<u>Advanced</u>					
United States	3130	66	1.9	3.2	5.4
Canada	3150	64	1.6	2.3	13.9
W. Germany	2890	46	4.2	3.5	45.8

*Enke, op. cit., p. 21.Source: Food & Agricultural Organization, The State of Food and Agriculture, 1961.

TABLE 2 - 3
(cont.)

<u>Kilograms available per capita annually</u>			
<u>(meat)</u>	<u>(eggs)</u>	<u>(fish)</u>	<u>(milk)</u>
100	7	2	126
29	5	-	58
15	5	4	93
-	-	-	-
24	7	2	94
-	-	-	-
25	4	8	141
-	-	-	-
2	0	1	50
6	4	23	20
-	-	-	-
4	0	2	47
-	-	-	-
14	1	6	43
-	-	-	-
-	-	-	-
-	-	-	-
10	2	1	58
-	-	-	-
-	-	-	-
94	20	5	307
82	16	6	274
54	13	7	220

are clearly reflected in these figures. However, the consumption of 50 kilograms of milk annually compares favorably with other Asian countries, including Japan. Of course, higher milk consumption reflects the relatively large number of cows in India.

The demographic data presented in Table 2-4 provides information on the condition of the population, as well as background for future discussion of investment in human capital. When one recognizes the tremendous size of the population of India percentage figures assume additional significance. For example, the annual birth and death rates of 26 and 12 respectively, do not seem unusual when compared with South American and Central American countries, but the massive population base of India must also be considered. Death rates assume added significance when one considers the high infant mortality rate of 100 per thousand, which is likely to be decreased rapidly and continuously with the advent of improved medical care in backward areas of the country. This circumstance alone may explain the change in crude annual increase from the 1.4 per cent shown in Table 2-4 to the 2 per cent increase which is presently estimated.⁹³

⁹³Institute of Applied Manpower Research, Fact Book on Manpower (New Delhi: Government of India Press, 1963), p. 14, Table 1.17.

TABLE 2 - 4

Demographic Data for Selected Countries: 1959*

	Popu- lation (millions)	Crude annual birth rate (	Crude annual death rate (per thousand)	Infant mortality rate)
<u>Latin America</u>				
Argentina	16	23	8	-
Brazil	52	-	-	170
Ecuador	3	46	-	106
Guatemala	3	50	17	90
Mexico	35	47	12	76
Peru	6	40	11	85
Venezuela	5	47	9	59
<u>Asia</u>				
Burma	29	38	18	134
India	438	26	12	100
Japan	93	18	7	33
Fed. of Malaya	6	42	10	66
Pakistan	94	-	-	-
Thailand	26	37	-	-
<u>Africa & Near East</u>				
Egypt	26	40	17	141
Ghana	7	52	21	90
Guinea	3	62	-	-
Iran	19	43	-	39
Iraq	6	12	-	-
Lybia	1	-	-	-
Tanganyika	9	-	-	-
R.S. Africa	16	48	16	107
<u>Advanced</u>				
United States	179	24	9	26
Canada	16	28	8	28
W. Germany	51	18	11	34

*Enke, op. cit., p. 21.Source: United Nations, Demographic Year Book, 1960.

TABLE 2 - 4

(cont.)

Life expectancy of males (aged 1 yr.)	Crude annual increase (%)	Fertility (women 10-49 years) per year (%)	Urban population (%)
62	1.5	7	62
39	-	-	36
57	-	-	35
48	3.3	15	25
44	3.5	15	44
51	2.9	-	-
-	3.8	-	-
-	2.0	-	10
39	1.4	-	17
67	1.1	5	56
-	3.2	17	43
-	-	-	10
52	-	-	12
42	2.3	-	36
-	3.1	-	-
41	-	22	-
-	-	-	30
-	-	-	37
-	-	-	-
-	-	23	4
8	3.2	-	43
68	1.5	9	64
69	2.0	10	67
68	.7	6	71

India's small percentage of urban population, 17 per cent as against 56 per cent for Japan and 43 per cent for Malaya, indicates that a preponderance of her earning capacity is based on agriculture, much of which is at a subsistence level. This is, of course, in sharp contrast with Western European and North American population distribution.

Life expectancy in India increased from 27 years in 1947 to 39 years in 1959 and is now estimated to hover around 40 years.⁹⁴ This has also been a factor in the increase in population now estimated at 475 million.⁹⁵

Some indications of development and well-being can be gathered from Table 2-5 with selected items of consumption. Although life expectancy in India is still low, it has increased sharply since 1947 (39 as compared to 27), which has added to the problem of over-population relative to production.

Newsprint at .2 kilos per capita is low, especially in the "world's largest democracy" which depends on communication. At the same time, it relates to the problem of lack of literacy, which was at 17 per cent in 1959. Steel consumption at 9 kilos per capita per annum is low. Furthermore, it must be viewed in terms of practically no consumption

⁹⁴Ibid., Table 1.18.

⁹⁵Ibid., p. 13, Table 1.15 from projected population estimates.

TABLE 2 - 5

Indications of Development and Well-Being
for Selected Countries: 1959a

	Life expectancy (males aged 1 yr.) ^b	Persons per passenger car ^c	Newsprint per capita (annual, in kilos)
<u>Latin America</u>			
Argentina	62	47	8.5
Brazil	39	213	3.2
Ecuador	57	422	1.6
Guatemala	48	701	.9
Mexico	44	148	2.4
Peru	51	331	1.3
Venezuela	-	82	4.5
<u>Asia</u>			
Burma	-	1977	.4
India	39	2513	.2
Japan	67	3392	6.2
Fed. of Malaya	-	253	.4
Pakistan	-	4446	.1
Thailand	52	2996	.7
<u>Africa & Near East</u>			
Egypt	42	335	1.2
Ghana	-	-	.5
Guinea	41	-	-
Iran	-	1969	-
Iraq	-	640	.3
Lybia	-	-	-
Tanganyika	-	-	-
R.S. Africa	48	29	5.0
<u>Advanced</u>			
United States	68	4	33.7
Canada	69	8	15.5
W. Germany	68	-	7.9

^aEnke, op. cit., pp. 48-49.

^bUnited Nations, Demographic Yearbook.

^cRand McNally, Commercial Atlas, 1962.

^dWorld Health Organization, Annual Epidemiological and Vital Statistics, 1958.

Principal Source: United Nations, Statistical Yearbook, 1960.

TABLE 2 - 5

(cont.)

Percentage of dwellings with piped water inside	Percentage of dwellings with electricity	Steel consumption per capita (annual, in kilos)	Inhabitants per physician ^d
-	60	97	760
16	25	37	2500
-	-	-	2900
-	39	-	6300
17	-	37	1700
-	-	9	2400
30	41	105	1700
-	-	-	2900
-	-	9	5000
81	82	163	940
-	-	33	7300
-	-	3	15,000
-	-	10	6900
-	-	9	-
-	-	-	25,000
-	-	-	-
-	-	21	4500
-	-	38	5500
-	-	-	7,000
-	-	-	19,000
-	-	134	190
82	92	491	790
87	97	355	930
-	88	444	730

TABLE 2 - 5

(cont.)

Persons per hospital or medical center bed ^d	Persons per secondary school teacher	Percentage population literate (15 years and over)
160	849	86
280	975	49
-	1026	56
360	1273	29
810	2419	57
480	746	43
330	1508	53
1600	-	57
2000	1176	17
120	320	-
-	-	47
-	1774	19
1100	1941	64
510	954	23
1800	1281	-
-	-	-
1000	-	15
750	1499	31
320	2074	21
600	15,309	-
200	100	29
120	365	97
90	544	96
100	266	96

by the bulk of the population and in terms of state control and channeling of production into internal improvements such as dams and the like.

Number of inhabitants per physician tend to disguise the fact that wide differences in medical care exist, with rates as high as 429,600 persons per physician found in hinterland areas.⁹⁶

Origin and disposition of gross national product for selected countries in 1959, shown in Table 2-6, gives an indication of the potential for future development in terms of raw material. While 73 per cent of the population of India is active in agriculture (see Table 2-6), 50 per cent of India's gross national product comes from agriculture, fishing and forestry.

Data on labor force and resources presented in Table 2-7 comes closer to our major theme - human resources and investment in human capital. While population density per square kilometer in India is high, especially when compared to the three other underdeveloped countries used in the above example, it is low compared to Japan. Japan, however is in a much more advanced stage of economic development than is India.

To make the comparison with the above three countries more meaningful, data concerning the amount of arable land

⁹⁶Institute of Applied Manpower Research, op. cit., p. 200, Table 13.6.

TABLE 2 - 6

Origins and Disposition of Gross National Product
for Selected Countries: 1959*

	From Agri- culture, fishing, and forestry (%)	From mining and manu- facturing (%)	To gross capital formation (%)	From net inflow of long-term capital and grants (%)
<u>Latin America</u>				
Argentina	23	21	18	0.5
Brazil	26	25	15	1.3
Ecuador	37	18	13	1.3
Guatemala	-	-	6	2.7
Mexico	-	-	17	1.9
Peru	24	29	23	-
Venezuela	6	43	18	-
<u>Asia</u>				
Burma	43	14	19	0.9
India	50	17	-	0.2
Japan	17	29	35	-
Fed. of Malaya	-	-	12	-
Pakistan	55	12	-	-
Thailand	40	15	17	-
<u>Africa & Near East</u>				
Egypt	33	13	-	0
Ghana	-	-	13	0
Guinea	-	-	-	-
Iran	-	-	-	-
Iraq	-	-	-	1.0
Lybia	-	-	-	-
Tanganyika	59	11	15	-
R.S. Africa	12	38	22	.8
<u>Advanced</u>				
United States	4	31	17	-
Canada	7	30	24	-
West Germany	7	46	23	-

*Enke, op. cit., p. 50.

Source: United Nations, Statistical Yearbook, 1960.

TABLE 2 - 7

Labor Force and Resources: 1959*

	Population (millions)	Population density (per sq. kilometer)	Percentage of land arable**
<u>Latin America</u>			
Argentina	16	7	-
Brazil	52	8	2
Ecuador	3	15	4
Guatemala	3	34	3
Mexico	35	17	5
Peru	6	8	1
Venezuela	5	7	1
<u>Asia</u>			
Burma	29	30	13
India	438	123	39
Japan	93	251	16
Fed. of Malaya	6	51	16
Pakistan	94	92	22
Thailand	26	43	10
<u>Africa & Near East</u>			
Egypt	26	25	2
Ghana	7	21	-
Guinea	3	11	-
Iran	19	12	15
Iraq	6	16	8
Lybia	1	1	-
Tanganyika	9	10	-
R. S. Africa	16	12	5
<u>Advanced</u>			
United States	179	19	24
Canada	16	2	3
W. Germany	51	213	-

*Enke, op. cit., p. 23.**Rand-McNally, Commercial Atlas, 1962.Principal Source: United Nations, Demographic Yearbook, 1960.

TABLE 2 - 7
(cont.)

Population to arable land (per sq. kilometer)	Percentage of males economically active	Percentage of females economically active	Percentage of population active in agriculture
-	63	17	-
400	56	10	35
375	56	20	80
1112	60	9	90
340	57	9	66
800	55	28	52
700	55	12	50
225	54	19	70
307	54	24	73
1564	58	41	-
318	51	17	82
416	-	-	85
430	52	50	90
750	54	6	75
-	-	-	-
-	71	16	-
802	57	6	85
200	55	4	-
-	58	8	-
-	53	7	-
240	-	-	-
72	56	26	19
67	53	18	24
-	65	34	25

should be taken into consideration, since all four countries are predominantly agricultural. Considering population density per square kilometer of arable land, one finds that India has 307 persons per square kilometer, while Brazil, Pakistan and Egypt have 400, 416 and 750 persons, respectively. India with its huge river-plains, for example, the Gangetic Plain with its huge alluvial deposits, has from ancient times supported extremely large populations. At the time of Asoka (300 B.C.) the population of this area is reputed to have been around 100 million.⁹⁷

Turning to foreign assistance in development plans, shown in Table 2-8, one finds that among the nations compared, India has received the largest amount of bilateral loans (\$171.3 million), the second largest amount of bilateral grants (\$160.3 million), and the largest overall amount of bilateral and multilateral grants and loans, with a total of 625 million dollars. Grants amounted to 28 per cent and loans amounted to 72 per cent, respectively, of the monies received.

Nevertheless, while net capital inflows, shown in Table 2-9 are large for India in terms of their ratio to gross capital accumulation - .17, with net capital inflow being 1.7 per cent of gross domestic production and 10 per

⁹⁷Norton S. Ginsburg, The Pattern of Asia (Englewood Cliffs, New Jersey: Prentice-Hall, Inc., 1958), p. 464.

cent being the gross capital accumulation, they still represent a relatively small addition to gross national product, 0.2 (Table 2-6). In viewing this situation Enke concluded that:

India (is) relatively far more dependent on external capital for domestic accumulation.⁹⁸

Enke also warns against excessive dependence:

By any statistical measurements and any numerology that you can invent, in the long run the great bulk of the capital requirements for development must be generated in the countries themselves. Outside assistance can only be marginal, at best.⁹⁹

What does investment in human capital mean in terms of human beings in a subsistence economy? What does it mean in terms of health and education for a country to be backward and how does this affect its economic development? Nurkse sums it up thus:

The vicious circle of poverty implies a circular constellation of forces tending to act and react upon one another in such a way as to keep a poor country in a state of poverty.... For example, a poor man may not have enough to eat: being underfed, his health may be weak; being physically weak, his working capacity is low, which means that he is poor, which means in turn that he will not have enough to eat; and so on. A situation of this sort,

⁹⁸Enke, op. cit., p. 501.

⁹⁹Ibid., p. 502. Mr. J. Burke Knapp, at a seminar held under the auspices of the Rand Corporation.

TABLE 2 - 8

Bilateral and Multilateral Grants and Loans Received by
Selected Countries 1958-1959*
(in millions of dollars)

	Bilateral		Multilateral		Total
	Grants	Loans	Grants	Loans	
<u>Latin America</u>					
Argentina	0.3	103.5	1.8	0	105.6
Brazil	15.7	105.2	2.6	4.7	128.2
Ecuador	5.5	0.9	1.5	9.0	16.9
Guatemala	29.2	- 0.9	1.2	7.9	37.4
Mexico	2.7	99.2	5.5	21.0	128.4
Peru	13.7	108.0	1.9	9.4	133.0
Venezuela	0.2	2.2	0.7	0	3.1
<u>Asia</u>					
Burma	2.2	4.5	7.9	7.6	22.2
Ceylon	31.7	4.1	148.3	24.1	208.2
Fed. of Malaya	25.2	- 1.3	0.6	0	24.5
India	160.3	171.3	13.0	280.4	625.0
Pakistan	194.6	95.9	2.8	29.6	322.9
Thailand	49.1	2.7	2.3	11.2	65.3
<u>Africa & Near East</u>					
Egypt	18.5	27.0	2.0	0	47.5
Ghana	3.8	0	0.8	0	4.6
Guinea	0.2	0	0	0	0.2
Iran	36.5	61.3	4.6	49.0	151.4
Iraq	6.3	0	1.3	0	7.6
Lybia	57.5	0.9	1.8	0	60.2
Nigeria	19.3	0	0.7	0	20.0

*Enke, op. cit., p. 501.

Source: United Nations, Statistical Yearbook, 1960,
Table 155.

TABLE 2 - 8

(cont.)

Grants as percentage	Loans as percentage	Total grants	Total loans
2	98	2.1	103.5
14	86	18.3	109.9
41	59	7.0	9.9
81	19	30.4	7.0
6	94	8.2	120.2
12	88	15.6	117.4
29	71	0.9	2.2
45	55	10.1	12.1
87	13	180.0	28.2
106	- 4	25.8	- 1.3
28	72	173.3	451.7
61	39	197.4	125.5
79	21	51.4	13.9
43	57	20.5	27.0
100	0	4.6	0
100	0	0.2	0
26	74	41.1	110.3
100	0	7.6	0
98	2	59.3	0.9
100	0	20.0	0

TABLE 2 - 9

Examples of Relative Importance of Net Capital Inflows in
the Accumulation of Domestic Gross Capital*
(Average of 1958 through 1960)

Country	Net capital inflows as per cent of GDP	Gross capital accumulation as per cent of GDP	Ratio of net capital inflows to gross capital accumulation
Argentina	.5	18	.03
Brazil	1.3	15	.09
Burma	.9	19	.05
Ecuador	1.3	13	.10
Guatemala	2.7	6	.45
India	1.7	10	.17
Mexico	1.9	17	.11

*Enke, op. cit., p. 502.

Source: United Nations, Statistical Yearbook, 1962.

relating to a country as a whole, can be summed up in the trite proposition: a country is poor because it is poor.¹⁰⁰

It may be worthwhile adding that in a state of bare subsistence, education may seem a luxury. But in reality, health measures such as are considered essential for the merest increase in productivity which is necessary for economic development in the face of rising populations and inadequate agricultural production, involve more than rudimentary education for their acceptance and dissemination. As Smith says:

No large population has ever experienced a major downtrend in fertility before achieving a very substantial measure of literacy and urbanization.¹⁰¹

¹⁰⁰Ragnar Nurkse, Problems of Capital Formation in Underdeveloped Countries (Oxford: Basil Blackwell, 1953), p. 4.

¹⁰¹Robert S. Smith, "Population and Economic Growth in Central America," Economic Development and Cultural Change, Vol. 10, No. 2 (Jan. 1962), pp. 134-150.

CHAPTER 3

EDUCATION IN INDIA:

THE NATIONAL SCENE

The elementary observation that illiteracy goes with underdevelopment, in every single case, has not been highlighted by most observers, though Viner pauses to say that this alone might be the necessary cause for development, and that we might not need to look any further.¹

He further says:

The first requirements for high labor productivity under modern conditions are that the masses of the population shall be literate, healthy and sufficiently well fed to be strong and energetic. In many countries, I feel sure, if this were achieved all else necessary for rapid economic development would come readily and easily of itself. I also feel sure that whenever this has not been accomplished and is not being strongly promoted to the utmost limits which the national resources permit, it is not necessary to look for the other factors, although they are certain to exist, to explain pervasive poverty and slow economic growth.²

Literacy Rates in India

Mamoria³ writes that the proportion of literates has been on the increase in India--from 16.6 per cent in 1951 to 23.7 per cent in 1960. The total number of literates

¹ Jacob Viner, "The Economics of Development," reprinted in Agarwala and Singh, The Economics of Development (Oxford University Press, 1963), p. 17.

² Ibid., p. 17.

³ C. B. Mamoria, Population Growth and Economic Development of India (Agra: Sahitya Bhawan Press: 1963), p. 53.

in absolute terms has increased from 60 million to 103 million. However, the number of illiterates has increased even more, in absolute terms.

In 1951 the literacy rate in India was 16.6 per cent, giving some 60 million literates out of a population of 361.1 million. The rate of literacy in 1961 was 24 per cent, giving some 105 million literates out of a population of 442.7 million. While the literate population increased from 60 million in 1951 to 105 million in 1961, during the same period the illiterate population increased from 301.1 million to 337.7 million.⁴ While literacy in India increased in percentage terms between 1951 and 1961, the increase in the absolute number of illiterates was almost as great as the increase in the absolute number of literates.

How can one reconcile these figures with the statement of Mamoria? The discrepancy lies in the definition of the term "literate," which was changed between the 1951 census and the 1961 census. In 1951, the term "literate" covered all persons who could "read and write a simple letter in some language," but treated all children aged four or below as illiterates. In 1961, the term "literate" covered all persons above the age of four "who could read and write with understanding."⁵

⁴Institute of Applied Manpower Research, Fact Book on Manpower (New Delhi: Government of India Press, 1963), pp. 12, 82.

⁵Ibid., p. 79.

Children below the age of four were not considered in computing literacy rates. Mamoria simply went on calculating according to the 1951 definition of the term "literate" and thus arrived at his conclusion.⁶

Literacy rates in cities and among men are judged by some Indian writers as more "effective" in terms of their utility. The difference in literacy between men and women was 34.4 per cent for men and 12.9 per cent for women in 1961; 24.9 per cent for men and 7.9 per cent for women in 1951. The difference in literacy in urban areas as compared to rural areas was 54.4 per cent in urban areas in 1961, breaking down into 66.0 per cent for men and 40.5 per cent for women; 22.4 per cent in rural areas in 1961, breaking down into 34.2 per cent for men and 10.1 per cent for women. Further breakdowns available include the percentages "who have passed an examination of the standard of Primary or Junior Basic but not matriculation and above" (18.8 per cent for "urban persons" and 5.9 per cent for "rural persons") and the percentages of "those who passed an examination of the standard of matriculation," which is 8.3 for urban persons and 0.8 per cent for rural persons.⁷

⁶Mamoria, op. cit.

⁷Ibid., pp. 82, 85.

Source: Census of India 1961 - Paper No. 1 of 1962.

Another difference with regard to the efficacy of literacy has yet to be experienced; that from the distribution of literacy by age. Apparently, this effect is still limited primarily to the 10-14 year age group, in 1961, which group may only now be beginning to exert its influence on production (1965). Literacy rates are much higher for this age group, with urban rates as high as 78.1 per cent for males and 62.6 per cent for females and rural rates as high as 49.1 per cent for males and 20.7 per cent for females.⁸

How many of these youngsters will survive till the age of fifteen is not known. Ghosh says that 45 percent of Indian children die before that age.⁹ Of course, that picture has been altered by the improvement in medical facilities, with the result that the population explosion of the 1950's has brought vastly increased numbers into the 5-9 year age group. The children in this age group have overmatched school facilities with resultant lower literacy figures (45.6 per cent for urban males and 35.9 per cent for urban females; 21.1 per cent for rural males and 10.1 per cent for rural females).¹⁰

⁸Ibid., p. 86.

Source: Registrar General of India.

⁹Mamoria, op. cit., p. 25.

¹⁰Fact Book on Manpower, op. cit., p. 86.

Provisions for Formal Education

Naik writes of conditions in 1947:

Educational conditions in the country on the eve of independence presented a picture with large gaps and inadequacies both in quantity and quality. Quantitatively the deficiencies which stood out conspicuously were the low enrollment in the age-group 6-14, the inadequate attendance of girls, the unequal development of education among different classes of society and different parts of the country and the low percentage of literacy among adults. Educational facilities in rural areas, which account for more than 80 per cent of the population of the country, were totally inadequate. The system was largely based on the broad ideals of spreading western science and literature among a small minority of the population and of training persons for services under the Government. It was excessively academic and book-centered and failed to promote social, cultural, economic or political development on proper lines. Technical and scientific education was far too under developed. The dominance of external examinations was pronounced at every stage; and stagnation and wastage formed a distinct characteristic of every sector, particularly at the primary stage.¹¹

Since then provisions for education at all levels have increased greatly.

Pre-Primary Education

Pre-primary education in India increased six-fold from 1950-51 to 1960-61. The number of such schools increased from 303 to the provisional figure of 1,842; the number of boys in attendance, from 15,002 to 92,699; the number of girls in attendance from 13,307 to 78,396; and the combined number of boys and girls in attendance from 28,309 to 171,095.¹²

¹¹J. P. Naik, Review of Education in India: 1947-61, (Delhi: Government of India Press, 1961), p. 783.

¹²Ibid., p. 89.

Source: Ministry of Education.

Primary Education

Primary education in India increased by over 50 per cent from 1950-51 to 1960-61. The number of schools increased from 209,671 to 330,464 (with a target of 415,000 such schools by 1965-66); the enrollment in these grades (1 through 5) has increased by almost 100 per cent, from 19,150,000 to 35,000,000. Percentagewise, enrollments rose from 42.6 per cent of the age-group in 1950-51 (including 59.8 per cent of the boys and 24.6 per cent of the girls) to 62.3 per cent of the age-group in 1960-61 (including 81.2 per cent of the boys and 42.1 per cent of the girls).¹³ While the target for 1965-66 was to have 90.4 per cent of this age-group in school, the target for the end of the Fourth Five Year Plan (in 1970) is now to have 93 per cent of the 6-11 age-group in school.¹⁴ This adjustment was made necessary by the explosive rise in the number of children in this age group.

Middle School Education

Middle school education (grades 6-8, children of the age group 11-13) in India has increased by over four-fold, from 13,596 such schools in 1950-51 to 49,679 such schools

¹³ Ibid., pp. 89, 90.

Sources: (1) Third Five Year Plan.
(2) Ministry of Education.

¹⁴ S.N.Saraf, Director of Education, Planning Commission, Government of India, Lecture at the Central Institute of Education (March 31, 1965).

in 1960-61 (with a target of 57,700 schools for 1965-66). Enrollment in these grades has increased by over 100 per cent, from 3,120,000 to 6,700,000 boys and girls in 1960-61. Percentagewise, enrollments rose from 12.7 per cent of the age-group in 1950-51 (including 20.7 per cent of the boys and 4.5 per cent of the girls) to 24.3 per cent of the age-group in 1960-61 (including 36.1 per cent of the boys and 12.0 per cent of the girls). The target for 1965-66 is to have 9,750,000 children in school (39.9 per cent of the boys and 16.5 per cent of the girls, with a combined percentage of 28.6 for boys and girls of this age-group).¹⁵ The target for the end of the Fourth Five Year Plan is to have 42 per cent of the children of the 11-14 age group in school; bringing the combined percentage of the children of the 6-14 age-group to 78 per cent in school.¹⁶

Secondary School Education

Secondary school education (grades 9-11, ages 14-16) increased by over two and one half times from 1950-51 to 1960-61. The number of schools increased from 7,288 to 17,228 schools with a target of 21,800 schools for 1965-66. The enrollment in these grades rose from 1,220,000 boys and girls (1,020,000 boys and 200,000 girls) in 1950-51 to

¹⁵Fact Book on Manpower, op. cit., pp. 89, 90.

¹⁶Saraf, op. cit.

2,910,000 boys and girls (2,360,000 boys and 550,000 girls). This represented 5.3 per cent of the age-group, with 8.7 per cent of the boys and 1.8 per cent of the girls. The target set for 1965-66 is to have some 4,560,000 boys and girls in school (3,570,000 boys and 990,000 girls) representing 15.6 per cent of the age-group (23.7 per cent of the boys and 6.9 per cent of the girls).¹⁷ The educational pattern in the Fourth Five Year Plan is to make secondary education terminal in character, and meaningful and self-contained, with emphasis on "multiple" schools. There is no present intention for secondary schooling to be universal as is the intention for elementary schooling.¹⁸ In this connection, it should be noted that the number of multi-purpose schools, begun in 1955-56 with only 255, had increased to 2,115 by 1960-61, although this number is pronounced more "likely" than "actual." The target set for 1965-66 is to have 2,446 multi-purpose schools.¹⁹

University Education

University education in India has more than doubled -- from 20 universities in 1947 to 55 in 1962. These universities are autonomous bodies, though since 1956 there has been

¹⁷Fact Book on Manpower, op. cit., pp. 89, 90.

¹⁸Saraf, op. cit.

¹⁹Fact Book on Manpower, op. cit., p. 89.

a Universities Grants Commission which coordinates and determines the standards for all universities. As a part of this service, a Three Year Degree Course has been introduced, where the traditional Intermediate Classes are gradually being replaced by the final year of the Higher Secondary/pre-university course and the first year of the three-year course.

To give some idea of college numbers and enrollment from 1950-51 through 1962-63, the number of colleges, including university, private, government and colleges meant exclusively for women increased three-fold from 695 to 2173. Enrollment increased during the corresponding length of time from 396,745 to 1,272,666 or from 1,102 per million of population in 1951 to 2,785 per million of population in 1962.²⁰

There has been a strong reaction against the proliferation of universities and one aim of the Fourth Five Year Plan, as outlined by one of its spokesmen, is to have 85 per cent of universities under government patronage, 45 per cent affiliated and 10-15 per cent involved in Ph.D. research concentrating on Science Research and Honors Post-graduate Studies.²¹

²⁰Ibid., pp. 130-132.

Source: University Development in India, 1962-63,
University Grants Commission.

²¹Saraf, op. cit.

Drop-Outs (Wastage) in Education

Drop-out from primary schools is being viewed with increasing concern. It is estimated that for every 100 children who enrolled in grade one in 1950-51, 64 enrolled in grade two in 1951-52, 50 in grade three in 1952-53, 43 in grade four in 1953-54 and 33 in grade five in 1954-55. The last estimates of drop-out (or wastage as Indian statisticians call it) are between 1956-57, where for every 100 who enrolled in grade one, 59 enrolled in grade two in 1957-58, 49 enrolled in grade three in 1958-59, 41 in grade four in 1959-60, and 35 in grade five in 1960-61. There has been insignificant change in the rate of wastage between the years 1950-51 and 1960-61 for primary school children.

The rates cited are the combined rates for boys and girls. For the same periods the retention rates for boys would run a few points higher for each grade, while the retention rates for girls would run a few points lower for each grade. For example, for boys for 1950-51 through 1954-55, the retention figures are 100 - 66 - 53 - 47 - 37. The corresponding figures for girls are 100 - 60 - 44 - 35 and 25. For the years 1956-57 through 1960-61, the corresponding figures for boys are 100 - 61 - 52 - 44 - 38, and for girls are 100 - 55 - 44 - 36 - 29.²²

²²Ibid., p. 98.

Source: Education in India - Ministry of Education.

For the middle school years, grades six through eight, the wastage rate figures are calculated using grade five enrollment as the base year. For the years 1950-51 through 1953-54, the retention rates were:

boys	100 - 78 - 65 - 57
girls	100 - 61 - 49 - 41
combined	100 - 74 - 62 - 53

For the years 1957-58 through 1960-61, the retention rates were:

boys	100 - 83 - 73 - 68
girls	100 - 73 - 62 - 54
combined	100 - 81 - 70 - 64. ²³

During the middle school year there seems to be greater retention in school. When combined with increased enrollments, the higher rate of retention makes for considerably higher numbers of children in school at the middle school level.

For the secondary school years in India, grades nine through eleven, the wastage rates are calculated using grade eight as base. For the years 1950-51 through 1953-54, the retention rates were:

boys	100 - 81 - 68 - 35
girls	100 - 71 - 62 - 42
combined	100 - 80 - 67 - 36

²³Ibid., p. 99.

Source: Education in India - Ministry of Education.

For the years 1957-58 through 1960-61, the retention rates were:

boys	100 - 83 - 74 - 46
girls	100 - 71 - 59 - 37
combined	100 - 81 - 71 - 44. ²⁴

Sharp drops in retention rate at the end of the tenth grade are apparent.

While enrollments at university levels have been going up, often at rapid rates, the "pass percentages" have tended to decrease for most examinations, perhaps supporting the view of some educators that the quality of Indian students has been lowered. One such educator states that "too many ill-equipped, ill-planned educational institutions have sprung up in some parts of the country."²⁵ It must also be remembered that the examinations in India for these degrees are external examinations, prepared by appointed committees from the various fields.

While enrollment in Arts went from 180,806 in 1950-51 to 543,841 in 1962-63, the pass rate for the Intermediate examination in Arts declined from 42.3 per cent in 1950-51 to 38.9 per cent in 1959-60. For the Bachelor of Arts, enrollment went from 53,343 in 1950-51 to 175,024 for 1960-61, while the pass rate declined from 47.5 per cent in 1950-51

²⁴Ibid., p. 100.

Source: Education in India - Ministry of Education.

²⁵A. L. Mudaliar, Education in India (New York: Asia Publishing House, 1960), p. 43.

to 43.5 per cent in 1959-60. For the Master of Arts, enrollment went from 12,430 in 1950-51 to 35,347 in 1960-61, while the pass rate increased from 73.5 per cent in 1950-51 to 82.2 per cent in 1959-60.

Enrollment in Science increased from 127,168 in 1950-51 to 386,374 in 1962-63, while pass percentages in the Intermediate Examinations in Science in 1950-51 were 43.2 per cent and stayed practically unchanged in 1959-60 at the rate of 43.9 per cent. Enrollment for the Bachelor of Science rose from 31,481 in 1950-51 to 117,955 in 1960-61, while pass percentages remained nearly constant at 48.5 per cent for most of the years from 1950-51 through 1959-60. Master of Science enrollment rose from 4,002 in 1950-51 to 12,045 in 1960-61, while pass percentages hovered around 80.0 per cent.

Enrollment in Commerce rose from 34,067 in 1950-51 to 129,951 in 1962-63, while pass percentages dropped from 51.7 per cent in 1950-51 to 42.7 per cent in 1959-60 for the Intermediate Examinations. Bachelor of Commerce enrollment rose from 15,863 in 1950-51 to 47,833 in 1960-61, while pass percentages for Bachelor of Commerce examinations remained near 47 per cent. Master of Commerce enrollment rose from 2,052 in 1950-51 to 5,655 in 1960-61, while pass percentages for Master of Commerce examinations dropped from

93.7 per cent in 1950-51 to 83.8 per cent in 1959-60.²⁶

Comparative State of Indian Education

Some indication of the comparative state of Indian education can be gained from the data presented in Table 3-1 and Table 3-2. Basing the Comparative Survey of Education on the years 1955-56 permits a comparative survey of these countries during the same period. The choice was made by Mahalanobis, who presents a comparative study of four large countries with the addition of two smaller through influential countries; the United Kingdom for its influence on other educational systems, and Japan, as the most advanced Asian country.

Table 3-2 presents more recent information. The initial information regarding India was somewhat limited, but with materials now available the limitations could, for the most part, be rectified. For most purposes, information for 1961 is obtainable. The number of students in secondary

²⁶Ibid., pp. 136, 139, 140, and 148.

Sources: (1) Education in Universities in India, Ministry of Education.

(2) University Development in India, University Grants Commission.

TABLE 3 - 1
Comparative Survey of Education in 1955-56*

1955-56	USA	USSR	UK
Pop. (m)	165	200	51
number of students in thousands (000's)			
Primary	25,458	25,055	5,484
Secondary	7,961	7,511	2,483
Higher	2,679	2,100	84
Total	36,098	34,666	8,051
number of students per 1,000 of population			
Primary	154.3	125.3	107.5
Secondary	48.2	37.6	48.7
Higher	16.2	10.5	1.6
Total	218.7	173.4	157.8
number of secondary and higher students per 1,000 primary students			
Secondary	312.7	299.8	452.8
Higher	105.2	83.8	15.3
Total	417.9	383.6	468.1
number of higher students per 1,000 secondary students			
Higher	336.5	279.6	33.8

* Source: P. C. Mahalanobis, Talks on Planning (Calcutta: Asia Publishing House, 1961), p. 171. Figures are taken from the U.N. Statistical Year Book 1956 and 1957 except for China for which they are taken from official data (in Chinese).

TABLE 3 - 1
(cont.)

Japan	China	India
90	608	384
12,956	53,126	22,899
8,063	4,473	8,789
610	292	681
21,629	57,891	32,369
144.4	87.4	59.6
89.6	7.4	22.9
6.8	0.5	1.8
140.8	95.3	84.3
622.3	84.2	383.8
47.1	5.5	29.7
669.4	89.7	413.5
75.7	65.3	77.5

TABLE 3 - 2

Comparative Survey of Education, 1961*

UN (1961)	USA ^a (1961)	USSR ^b (1961)	UK ^a (1961)
Pop. (m)	184	218	54
number of students in thousands (000's)			
Primary	27,697	31,300	4,320
Secondary	14,289	4,400	3,247
Higher	3,726	2,639	271
Total	45,712	38,339	7,838
number of students per 1,000 of population			
Primary	151	144	80
Secondary	78	20	60
Higher	20	12	5
Total	248	176	145
number of secondary and higher students per 1,000 primary students			
Secondary	517	139	750
Higher	132	83	63
number of higher students per 1,000 secondary students			
Higher	255	597	84

*Source: Institute of Applied Manpower Research, Fact Book on Manpower (New Delhi: Government of India Press, 1963), pp. 102, 104, 105, 135. Figures are taken from UNESCO, Basic Facts and Figures (1961).

^aUnited Nations, Statistical Yearbook, 1964 (New York, 1965), pp. 23-24, 672,691.

^bUnited Nations, Demographic Yearbook, 1962 (New York, 1962), pp. 123-141.

TABLE 3 - 2
(cont.)

Japan (1960)	China (1958,59)	India (1961)
93	648	442
12,590	86,400 ('58)	35,000
9,126	3,900 ('59)	9,610
703	600 ('58)	1,155
22,419	90,900	45,765
135	133	78
98	7	22
8	1	3
241	140	130
726	53	282
57	7	38
78	141	135

schools was taken from another table in the source,²⁷ and the information on higher education was found in the same manner.²⁸ By and large the comments on Table 3-1 are applicable to Table 3-2, which will furnish information on the changing pattern in education in each country.

With a population more than double that of the United States of America, India had fewer primary children in school. She had almost twice the number of children in primary school as Japan, which has less than one-fourth of the population of India. Apparently, by 1960 the stringent birth prevention and abortion measures in Japan had reduced the number of primary children in that country. Likewise, India has disproportionately less children in school than the United Kingdom, which has a very low birthrate (16 per thousand) as compared to India's high birthrate (40 per thousand).²⁹ India seems

²⁷Fact Book on Manpower, op. cit., p. 90, Table 6.3. Since Primary Grades showed an enrollment of 35 million, it was judged that both middle school and secondary school enrollments would make up second level enrollments. Since the 1958 figure was given as 14,078 million, while enrollments for both middle school (4.29 m.) and for secondary school (1.86 m.) came to only 6.15 million for the year 1955-56. The year 1960-61 had enrollments of only 6.70 million for middle school, and 2.91 million for secondary school. It was this combined number of 9.61 million which was judged the most plausible.

²⁸Ibid., p. 136, Table 9.6.
Sources: (1) Education in Universities in India, Ministry of Education.
(2) University Development in India, University Grants Commission.

²⁹Institute of Applied Manpower Research, Planned Development and Population Growth (Delhi: Public Printing Service, November, 1963), p. 21, Table 1.

to be in step with China with regard to children in primary grades, both in the 1955-56 and in the 1961 comparison.

It is in the number of secondary students that India shows larger numbers than China, especially in the continuing students, where India shows 22 compared to 7 for China. These figures could be distorted by the age composition of the population, i.e., more children in lower age groups, etc. This is further demonstrated when we see the Indian figure of 282 per thousand of primary students going on into secondary education, which eclipses the 139 of the USSR. Again, 135 per thousand go into higher education, which is higher than the 78 for Japan, and the 84 for the United Kingdom. In fact, there is pride in India in the high "proportion of the graduates to literates," given at 900 per million literates in India as compared to 450 per million literates for the United Kingdom.³⁰

Manpower

In so far as education is judged the "seed corn for development," it befits to begin the analysis of manpower training with the facilities for teacher education at the various levels. Normally, training facilities for teachers are available at two levels, viz., school and college. Teachers' Training Schools train teachers for primary/lower

³⁰P. C. Mahalanobis, Talks on Planning, op. cit., p. 66.

elementary and pre-primary classes and the Teachers' Training Colleges train teachers for the other school stages.³¹

Manpower in Teaching

Teachers in Pre-Primary Schools numbered 866 in 1950-51, of which 80.4 per cent were women and 19.6 per cent were men. By 1959-60, provisional figures show that this number had increased to 3,486, composed of 88.8 per cent women and 11.2 per cent men. Further provisional figures, however, show that 1960-61 has witnessed a drop to 2,618 with 89.9 per cent women and 10.1 per cent men.

Teachers in Primary Schools numbered 518,000 in 1949-50, composed of 84.7 per cent men and 15.3 per cent women. By 1959-60, they numbered 731,000, composed of 82.9 per cent men and 17.1 women. In 1949-50, 8.8 per cent of these were matriculates or above (high school graduates or above), while 91.2 per cent were non-matriculates (non-high school graduates). By 1959-60, 33.2 per cent of primary school teachers were matriculates, while 66.8 per cent were non-matriculates. Of these primary school teachers, again in 1949-50, 58.3 per cent were trained, while 41.7 per cent were untrained; in 1959-60, the number of the trained had risen to 63.9 per cent while the number of the untrained declined to 36.0 per cent.³²

³¹Institute of Applied Manpower Research, Fact Book on Manpower (New Delhi: Government of India Press, 1963), p. 118.

³²Ibid., pp. 120-121.

Source: First Year Book of Education, 1961 Ministry of Education.

Teachers in middle schools (grades six through eight) numbered 79,000 in 1949-50, while they numbered 292,000 by 1959-60. In 1949-50, 84.7 per cent were men, but only 76.0 per cent were men in 1959-60. While 44.7 per cent of these teachers were matriculates or above, in 1949-50, by 1959-60 52.7 per cent were matriculates or above. It is worth noting that the percentage of matriculates has increased in spite of a nearly four-fold increase in the number of teachers. With regard to professional training, whereas 52.6 per cent of middle school teachers were trained in 1949-50, in 1959-60, 66.7 per cent were trained.³³

Of the teachers in secondary schools (grades nine through eleven), 83.9 per cent of a total of 116,000 were men in 1949-50; in 1959-60, the number of these teachers had increased to 267,000, with 79.4 per cent men. Whereas 41.6 per cent out of a total of 116,000 teachers were university graduates in 1949-50, in 1959-60, 48.7 per cent out of a total of 267,000 were university graduates. In 1949-50, 53.6 per cent were trained teachers, while in 1959-60, 63.7 per cent were trained teachers.³⁴

Teachers in vocational and technical schools have increased in number from 11,241 in 1949-50 to 27,040 in

³³Ibid., pp. 122-123.

Source: First Year Book of Education, 1961, Ministry of Education.

³⁴Ibid., pp. 124-125.

Source: First Year Book of Education, 1961, Ministry of Education.

1960-61. Whereas 74.0 per cent were men in 1949-50, in 1959-60, 85.5 per cent were men.³⁵

Social education schools (which were formerly called basic schools and now encompass adult literacy classes) employed 39,267 teachers in 1949-50. After a slow start these schools have progressively employed more teachers each year, with the 1960-61 figure at 55,060 teachers.³⁶

Teacher-pupil ratios have been held practically constant for primary schools, with ratios of 1:34 in 1950-1, 1:33 in 1955-56, and 1:36 in 1960-61. Middle schools, however, have witnessed swiftly increasing teacher-pupil ratios; from 1:24 in 1950-51 to 1:26 in 1955-56, and then to 1:31 in 1960-61. High and higher secondary schools have maintained the same ratios for the three periods of investigation, 1:25.

According to United Nations publications, comparative figures for teacher-pupil ratios show that Indian primary school figures for 1960 are not significantly greater than the figures for Japan, Yugoslavia, Pakistan, Indonesia and Turkey. At the second level, where Indian figures are calculated at 1:28 on the basis of both middle school and secondary school figures, India is again in the company

³⁵Ibid., p. 126.

Source: First Year Book of Education, 1961, Ministry of Education.

³⁶Ibid., p. 127.

Source: First Year Book of Education, 1961, Ministry of Education.

of Japan and Indonesia and significantly higher than other countries. Examples of some countries with low figures are the U.S.S.R., (1959); Italy (1958); and Denmark (1959) with 1:13. The United States of America is placed at 1:17 for 1957.³⁷

Teacher training is considered under two categories: Teachers' Training Schools and Teachers' Training Colleges. Teachers' Training Schools numbered 720 in 1949-50 and 1,140 in 1960-61. Enrollment rose from 67,046 in 1949-50, with 50,066 boys and 16,046 girls, to 121,772 in 1960-61, with 90,764 boys and 31,008 girls. The corresponding graduating ("out-turn") figures for those years were 32,784 (with 25,127 boys and 7,657 girls) in 1949-50, and 60,862 (with 45,992 boys and 14,870 girls) for 1960-61.

Teachers' Training Colleges, given graduate ranking, rose from 48 in number in 1949-50 to 475 in 1960-61. They accepted 4,761 candidates in 1949-50, including 3,141 boys and 1,620 girls; in 1960-61, they accepted 46,601 candidates, with 31,385 boys and 5,216 girls. Over ten times the number of boys were accepted as candidates in 1960-61 as in 1949-50; four times the number of girls were accepted in 1960-61 as in 1949-50. In terms of "out-turn" for those years, 3,363 graduates, made up of 2,456 boys and 907 girls were turned out in 1949-50; in 1960-61, there were 17,457

³⁷Ibid., p. 127.

Source: Basic Facts and Figures, 1961, UNESCO.

graduates, made up of 12,030 boys and 5,327 girls. Six times the number of boys and girls graduated in 1960-61 from these colleges as graduated in 1949-50.³⁸

Manpower in Technical and Vocational Training

Developing countries often have their greatest difficulty in training and maintaining middle-level technicians. Through the year 1958-59 the institutions providing vocational and technical education in India were classified in three categories: (1) Engineering Schools, (2) Arts and Crafts Schools, and (3) Technical and Industrial Schools. Beginning with the year 1959-60, the last two categories have been combined into one and the new classification is (1) Engineering/Polytechnic Schools and (2) Arts and Crafts/Technical and Industrial Schools. Technical schools requiring at least one of the post-Matriculation/School Leaving Certificate Courses for admission were classified in the first category, while technical schools requiring only those courses where the minimum qualification for admission is below Matriculation or equivalent level were placed in the second category. Most non-technical institutions do not require the minimum qualification to be above the Matriculation level. These schools vary in duration from three months to three years.³⁹

³⁸Ibid., pp. 128-129.

Sources: Ministry of Education. First Year Book of Education, 1961, Ministry of Education.

³⁹Ibid., p. 107.

The out-turn of matriculates rose from 241,143 in 1950-51 to 653,640 in 1960-61. The number in 1950-51 represented a passing percentage of 48.8 per cent, so roughly double this number took the examination, almost 250,000. The 1960-61 figure represented a passing percentage of 43.8 per cent, which means that around 1,200,000 took the examinations in 1960-61.⁴⁰

The 2,028 vocational and technical schools were attended by 162,532 pupils in 1949-50, comprising 126,772 boys and 35,700 girls; in 1960-61, 4,145 vocational and technical schools were attended by 424,581 pupils, comprising 339,561 boys and 85,051 girls.⁴¹

Arts and Crafts schools almost tripled in number from 137 in 1949-50 to 374 in 1958-59. Their pupils, made up of almost twice as many girls (6,353) as boys (3,534), numbered 9,887 in 1949-50; in 1958-59, there were 15,696 pupils at these schools, with almost four times as many girls (12,011) as boys (3,685).⁴²

Technical and Industrial Schools rose in number from 486 in 1949-50 to 833 in 1958-59. They later amalgamated with Arts and Crafts Schools and the combined number in

⁴⁰Ibid., p. 106.

Source: Education in India - Ministry of Education.

⁴¹Ibid., p. 108.

Sources: (1) First Year Book of Education, 1961, Ministry of Education.

(2) Education in India, Ministry of Education (1958-59 to 1960-61).

⁴²Ibid., p. 109.

1960-61 was estimated at 1,202. The numbers attending these schools rose in number from 34,326 in 1949-50 to 64,705 in 1958-59. The last enrollment figure available for these schools is the joint one with Arts and Crafts Schools--86,595 in 1960-61. While there were 26,549 boys to 7,777 girls in 1949-50, the latest figures show 57,454 boys to 29,141 girls. The boys have doubled in number, while the girls have quadrupled.⁴³

Agricultural schools increased in number from 39 in 1949-50 to 102 in 1960-61. There were almost five times as many students in 1960-61 as there were in 1949-50, 7,736 to 1,882. There were 15 girls in attendance in 1949-50 and 74 girls in attendance in 1960-61.⁴⁴

Engineering schools have increased spectacularly. In 1949-50 there were 19 schools attended by 3,870 pupils including six girls; in 1960-61, there were 279 schools attended by 76,096 students, including 398 girls.⁴⁵

There were two forestry schools attended by 53 boys in 1949-50. In 1960-61, there were four schools of forestry, attended by some 170 pupils, all boys.⁴⁶

Schools for Physical Education show an opposite trend.

⁴³Ibid., p. 109

⁴⁴Ibid., p. 110.

⁴⁵Ibid., p. 110.

⁴⁶Ibid., p. 111.

From 174 schools in 1949-50, with 13,996 pupils (including 1,292 girls), they reached a low ebb in 1954-55 with a total of 14 schools and 1,962 pupils, including 324 girls. Figures for 1960-61 show 41 schools for physical education attended by 3,444 pupils (including 515 girls).⁴⁷

Schools for commerce education numbered 412 in 1949-50 with 27,682 students, 25,697 boys and 1,985 girls. They have increased to 1,189 schools in 1960-61, with 112,824 students (95,790 boys and 17,034 girls).

Medicine and veterinary science schools were 39 in number in 1949-50, with 3,790 students, 2,438 boys and 1,352 girls. There were 170 such schools in 1960-61, with 11,590 students made up of 5,252 boys and 6,338 girls. It is interesting to note that from having twice as many boys as girls in 1949-50, these schools had over a fifth more girls than boys in 1960-61.⁴⁸

From no marine schools in 1949-50, and one in 1952-53 with 116 students, by 1960-61 India had five marine schools with 1,561 pupils, all boys. This number of pupils had dropped from the peak number of 1,951 in 1958-59.⁴⁹

The intake into industrial institutes is broken down into trades, engineering and non-engineering. For engineering,

⁴⁷Ibid., p. 111.

⁴⁸Ibid., p. 112.

⁴⁹Ibid., p. 113.

the intake from 1955-56 to 1960-61 has increased by over five times. A detailed breakdown reveals that the intake of students as blacksmiths increased from 288 to 2,036; carpenters from 688 to 3,098; civil draftsmen from 704 to 3,024; mechanical draftsmen from 496 to 2,992; electricians from 816 to 4,800; electroplaters from 96 to 656; fitters from 1,328 to 6,896; grinders from 24 to 120; linemen and wiremen from 288 to 2,464; machinists from 456 to 1,884; mechanics with the I.C.E. degree from 96 to 240; instrument mechanics from 128 to 428; motor mechanics from 672 to 2,272; radio mechanics from 256 to 704; refrigerator mechanics from 56 to 216; tractor mechanics from 40 to 216; molders from 40 to 216; painters from 128 to 368; pattern-makers from 129 to 816; plumbers from 128 to 352; sheet metal workers from 288 to 1,824; surveyors from 320 to 1,568; tool makers from 24 to 256; turners from 492 to 2,956; watch repairers from 64 to 96; welders from 312 to 2,636; and wireless operators from 96 to 112. In addition, there were newly available provisions for 32 die fitters and 32 upholsterers.

Non-engineering trades almost doubled their student numbers from 1955-56 to 1960-61. The breakdown in trades is for bleaching and dyeing from 144 to 244; book binding from 128 to 176; cutting and tailoring from 704 to 1,096; embroidery and needlework remained constant at 144; hand-weaving of fancy furnishings from 122 to 272; hand composition

and proof reading from 64 to 112; handweaving of woolen fabric stayed at 32 students; knitting with hand and machine rose from 96 to 208; manufacture of footwear from 96 to 160; manufacture of household utensils from 16 to 64; manufacture of leather sports goods 16 to 32; manufacture of wooden sports goods 32 to 48; manufacture of miscellaneous sports goods stayed at 16; manufacture of suitcases and leather goods rose from 96 to 144; preservation of fruits and vegetables including confectionery from 80 to 96; printing machine operation from 80 to 160; handweaving of carpets from 16 to 48; stenography was begun with 16 pupils; cane, bamboo and willow work with 16 pupils; weaving of silk and woolen fabric with 32 pupils; and spinning with 40 pupils.

The grand total of all trades rose almost five times in the number of students in industrial training institutes-- from 10,534 in 1955-56 to 48,022 in 1960-61.⁵⁰

Manpower in Science and Engineering

Science enrollment in universities and colleges in India has more than doubled, from 127,168 in 1950-51 to 297,272 in 1960-61. While entrance figures have doubled-- from 90,974 in Intermediate and pre-university enrollments for 1950-51 to 165,430 in 1960-61--the number of candidates

⁵⁰Ibid., pp. 115-116.

for graduate degrees has increased almost four times, from 31,481 in 1950-51 to 117,955 in 1960-61. Postgraduate enrollments have trebled, going from 4,002 in 1950-51 to 12,045 in 1960-61. Research in science has increased its share of students from 711 in 1950-51 to 1,842 in 1960-61.⁵¹

Correspondingly, the out-turn of science graduates has risen over the years 1950-51 to 1960-61. Pre-university degree holders rose from 6,815 in 1957-58 to well over four times that number in 1960-61--27,052. Intermediate degree holders rose in number from 27,343 in 1950-51 to 33,110 in 1960-61. (The wastage rate has been rather high, judging by the fact that from the enrollment of 90,974 in 1950-51 the out-turn in 1951-52 at the end of two years in the intermediate level of science was 26,571.) Bachelor of Science graduates rose in number from 10,403 in 1950-51 to more than double this number, 23,829 in 1959-60, including those with Bachelor of Science Honors degrees. Bachelor of Science Honors graduates likewise almost doubled between 1950-51 and 1959-60, numbering 786 and 1,317 respectively.⁵²

Comparative figures for science graduates in various countries in 1959 show India with an out-turn of 3,505, or

⁵¹Ibid., p. 132.

Source: University Grants Commission.

⁵²Ibid., p. 154.

Source: Education in Universities in India, Ministry of Education.

a rate of 0.81 per hundred thousand of population. The United States had an out-turn of 39,628 for a rate of 22.29 per hundred thousand population, while the United Kingdom produced 5,415, a rate of 10.38 per hundred thousand population. Among lower producing countries, Denmark produced .70 per hundred thousand and Turkey, 0.41 per hundred thousand population.⁵³

India employs .20 scientists per thousand persons employed; the United States employs 4.19 scientists per thousand persons employed; the United Kingdom employs 3.09 scientists per thousand of persons employed; Denmark employs 0.58 scientists per thousand persons employed; and Turkey employs 0.26 scientists per thousand persons employed.⁵⁴

Engineering courses may be categorized as degree courses and diploma courses. Degree courses are offered at engineering colleges and higher technological institutes and are usually of four years duration after receipt of the Intermediate degree in science. Diploma courses are offered at polytechnic institutions and are usually three years in duration after high school education in science.

⁵³Ibid., p. 157.

Sources: (1) Third International Survey on the Demand for and Supply of Scientific Personnel-Organization for Economic Cooperation and Development (62), 33.
(2) United Nations, Demographic Year Book, 1960.

⁵⁴Ibid., p. 159. Taken from the figures for 1959.

The number of engineering colleges rose from 49 in 1950 to 144 in 1962. Their intake in 1950 was 4,119 and their out-turn was 2,198. Their intake in 1962 was 17,074 and their out-turn was 8,426. Thus, a four-fold increase in graduates within a twelve year period was achieved with a little over twice the number of institutions. Engineering diploma institutions rose in number from 86 in 1950 to 231 in 1962. Their intake was 5,903 in 1950 and their out-turn was 2,478. Their intake was 30,826 in 1962 and their out-turn was 12,046. Thus, a six-fold increase was achieved within twelve years with less than a three-fold increase in the number of institutions.⁵⁵

Comparative figures for the out-turn of engineering graduates and diploma holders per 100,000 population in selected countries for 1959 show India graduating 1.6 degree holders and a total of 4 diploma and degree holders per 100,000 of population in 1961. The United States is credited with 21 degree holders per 100,000 population, while the United Kingdom turned out 6 degree holders and 15 degree and diploma holders per 100,000 of population. Among lower producing countries are Italy with 5 degree holders, Greece with 3 degree holders, and Turkey with 3 degree holders and

⁵⁵Ibid., pp. 161-163.

Source: Ministry of Scientific Research and Cultural Affairs.

5 degree and diploma holders, per 100,000 of population.⁵⁶

The number of graduate engineers in India increased from an estimated 31,200 in 1956 to 57,508 in 1961 and is projected to reach 109,248 in 1966. Likewise, the number of engineering diploma holders in India increased from 40,700 in 1956 to 73,208 in 1961 and is projected to reach 154,708 in 1966.⁵⁷ The Third Five Year Plan estimated another 51,000 degree holders and 100,000 diploma holders by the end of the plan in 1966, with estimates of a further 80,000 degree holders and 125,000 diploma holders to be produced during the Fourth Five Year Plan.⁵⁸

India had 131,000 engineers employed in 1961; they were comprised of 58,000 university graduates and 73,000 with other qualifications. On the basis of the total employment of 188,417,000, this gives a ratio of .70 per 1,000 employed persons, further breaking down into .31 graduate engineers and .39 other qualified engineers.

The United States in 1959 had 785,000 graduate engineers,

⁵⁶Ibid., p. 171.

Source: Organization for Economic Cooperation and Development, Third International Survey on the Demand for and Supply of Scientific Personnel (1962), 33.

⁵⁷Ibid., pp. 176, 178.

Source: Report of the Working Group on Technical Education and Vocational Training, 1960 - Planning Commission.

⁵⁸Ibid., p. 178.

Source: Third Five Year Plan Report.

a ratio of 11.97 graduate engineers per 1,000 persons employed. The United Kingdom had 100,800 graduate engineers, or 4.25 graduate engineers per 1,000 persons employed. Turkey had 0.65 engineers per 1,000 persons employed; Greece had 1.75 engineers per 1,000 persons employed.⁵⁹

Agricultural Colleges in India increased in number from 19 institutions in 1951 to 62 in 1962. Their intake was 1,060 students and their out-turn was 1,065 graduates in 1951. In 1962, their intake was 7,483 and their out-turn was 2,912 graduates. The number of Veterinary College increased from 8 institutions in 1951 to 18 in 1962. Their intake in 1951 was 434 students and their out-turn was 242. Their intake in 1962 was 1,219 and their out-turn was 988 in 1962.⁶⁰ The estimated number of agricultural graduates in India rose from 4,500 in 1950, to 8,000 in 1955, to 14,00 in 1960. There were 1,000 veterinary graduates in India in 1950, 2,200 in 1955 and 5,000 in 1960.⁶¹ An additional 200,000 agricultural graduates are projected in the Third

⁵⁹Ibid., p. 180.

Source: Organization for Economic Cooperation and Development: Third International Survey on the Demand for and Supply of Scientific Personnel (1962), p. 33.

⁶⁰Ibid., pp. 182, 183.

Sources: (1) Agricultural Personnel Committee Report-Planning Commission.
(2) Ministry of Education, Education in India.
(3) University Grants Commission.
(4) Indian Council of Agricultural Research.

⁶¹Ibid., p. 191.

Source: The Third Five Year Plan for 1960.

Plan, which ends in 1966, with an additional 30,000 to be provided during the Fourth Five Year Plan. The Third Five Year Plan provided for 6,800 veterinary graduates, with an additional 7,000 to be produced during the Fourth Five Year Plan.⁶²

Manpower in the Field of Medicine

The number of medical colleges in India increased from 20 in 1950, to 42 in 1955, to 57 in 1960, with 75 as the target for 1965. Intake of students went from 2,500 in 1950, to 3,500 in 1955, to 5,800 in 1960 and to 8,000 as the target in 1965. The corresponding out-turn of graduates was 1,557 in 1950, 2,743 in 1955, 3,200 in 1960, and 4,830 as the target for 1965.⁶³

There were 56,000 active doctors in 1950, giving a doctor:population ratio of 1:6,393. By 1960, there were 70,000 doctors, giving a doctor:population ratio of 1:6,157. Estimates for 1965 are for 81,000 doctors in a population of 482 million, yielding a ratio of 1:5,951. It is estimated that the number of doctors will increase to 97,000 by 1970 and the doctor:population ratio will be reduced to

⁶²Ibid., p. 192.

Source: The Third Five Year Plan for 1960.

⁶³Ibid., p. 194.

Sources: (1) Ministry of Health.
(2) Third Five Year Plan.

1:5,598.⁶⁴

Comparable data for other countries shows that in 1960 India with 70,000 doctors had a doctor:population ratio of 1:6,157. Only Thailand with 1:6,932 in 1958, Mainland China with 1:8,700 in 1958; Pakistan with 1:14,769 in 1954; and Indonesia with 1:94,654 in 1959 were below her. The U.S.S.R. in 1959 had a ratio of 1:555; the United States in 1958 a ratio of 1:805; Japan in 1958 a ratio of 1:943; and the United Kingdom in 1958 a ratio of 1:1,065.⁶⁵

India's doctor:population ratio varies greatly between rural and urban areas as well as varying among the different States. For example, there is a 1:500 ratio in the urban areas of the State of Assam, and a 1:691 ratio in the urban areas of the State of West Bengal. In the rural areas of these States, the ratios drop to 1:8,285 for Assam and 1:9,102 for West Bengal. Extremely high ratios can be found in rural areas of such states as Maharashtra where the ratio

⁶⁴Ibid., p. 197.

Sources: (1) Third Year Plan.
(2) Population estimates: Office of the Registrar General and the Expert Committee's estimates adjusted to one year.
(3) Estimates for 1970 have been worked out in the Institute of Applied Manpower Research.

⁶⁵Ibid., p. 201.

Sources: (1) U.N. Statistical Year Book, 1961.
(2) U.N. Demographic Year Book, 1960.
(3) National Science Foundation, Professional Manpower and Education-Communist China.

is 1:429,600 and Kerala where it is 1:201,571.⁶⁶

In common with many underdeveloped countries, India has lower ratios for "ancillary health personnel," such as nurses and midwives. For example, the ratio of nurses to population in 1950 was 1:23,867. In 1955 it was 1:21,027, while in 1960 it was 1:15,962. The target for 1965 is to have 1:10,711. The ratio of midwives to population was 1:44,750 in 1950. The ratio was 1:30,438 in 1955, 1:21,658 in 1960 and the target is 1:9,938 in 1965. The ratio of sanitary inspectors was 1:102,886 in 1950; 1:97,250 in 1955; 1:71,833 in 1960; and is targeted to reach 1:25,104 in 1965. The ratio of pharmacists to population was 1:12,062 in 1960, and is targeted to reach 1:10,042 in 1965.⁶⁷

Harbison's Comparative Rating of Manpower in India

Harbison⁶⁸ has made up a capsule of Indian educational-cum-economic development within the confines of manpower for economic development (See Table 3 - 3.)

He places India in the Third Level because of its human potential; while Indian income per capita would of itself place India below countries such as Nigeria in the First Level

⁶⁶Ibid., p. 200.

⁶⁷Ibid., p. 207.

Sources: (1) Third Five Year Plan for number of ancillary health personnel.
(2) Office of the Registrar General for population estimates.

⁶⁸Frederick Harbison and Charles A. Myers, Education, Manpower and Economic Growth (New York: McGraw Hill Book Co., 1964), p. 47.

TABLE 3 - 3
Countries Ranked by Composite Index

Country	Composite index	Per capita G.N.P. U.S. dollars	Per cent population in agriculture
<u>Level II</u>			
China (Mainland)	19.5	73	69
<u>Level III</u>			
India	35.2	73	71
<u>Level IV</u>			
U.S.S.R	92.9	600	50
Japan	111.4	306	39
United Kingdom	121.6	1,189	5
United States	261.3	2,577	12

Source: Frederick Harbison and Charles A. Myers, Education Manpower and Economic Growth (New York: McGraw Hill Book Co., 1964), p. 47.

TABLE 3 - 3

(cont.)

Country	Stock in high-level Manpower		
	Teachers 1st and 2nd levels	Engineers, scientists per 10,000 population	Physicians, dentists per 10,000 population
<u>Level II</u>			
China (Mainland)	24.0	3.1	2.6
<u>Level III</u>			
India	30.2	2.4	1.5
<u>Level IV</u>			
U.S.S.R	65.2	48.1	16.7
Japan	75.3	Na	13.5
United Kingdom	64.2	33.2	11.5
United States	135.1	61.7	18.0

TABLE 3 - 3
(cont.)

Country	Measurement of educational development: enrollment ratios			
	1st level unadj.	1st and 2nd level adj.	2nd level adj.	3rd level unadj.
<u>Level II</u>				
China (Mainland)	36	35	14.2	1.0
<u>Level III</u>				
India	24	35	24.2	2.2
<u>Level IV</u>				
U.S.S.R.	67	79	33.9	11.8
Japan	62	96	79.4	8.4
United Kingdom	68	81	82.1	7.9
United States	88	104	95.3	33.2

TABLE 3 - 3

(cont.)

Country	Orientation of higher education per cent enrolled		Expenditure on education, per cent of national income	Per cent in age group 5 - 14
	In science and technology	In humanities, law, arts		
<u>Level II</u>				
China (Mainland)	55.7	Na	Na	20.6
<u>Level III</u>				
India	27.3	57.9	1.7	24.1
<u>Level IV</u>				
U.S.S.R.	45.3	7.6	7.1	20.0
Japan	22.1	26.6	5.7	22.7
United Kingdom	33.5	34.5	4.2	15.2
United States	22.7	Na	4.6	18.4

of Development, such items as Indian teachers and engineers raise the rank of India.

Unemployment in India

In view of observations such as "Unless (education, where intellectuals are used to train yet more intellectuals) takes place in a context of vigorous economic growth, and above all of a manpower plan, the development of education is merely an open invitation to revolution,"⁶⁹ it is worthwhile to examine the question of unemployment in India, as shown in Table 3 - 4. This information was gathered from samples taken in rural and urban areas for one week periods from July 1958 through June 1959.

In both rural and urban areas, and in every sample, the percentage of matriculation and above is higher among the unemployed than among the employed. For rural areas, it runs three to four times higher; for urban areas it is one and a half times higher for two of the three samples, while for the third sample it is four times as high.

For persons who were literate below the matriculation level, the picture in rural areas shows that unemployment was substantially lower percentagewise in two cases and slightly higher in one than was the percentage of these persons who were employed. In urban areas, the percentage

⁶⁹John Vaizey, The Economics of Education (New York: The Free Press of Glencoe, 1962), p. 127.

TABLE 3 - 4

Percentage Distribution of Employed
and Unemployed in Rural and Urban Areas*

RURAL	Sample One	
	Employed	Unemployed
Illiterate	76.67	82.28
Literate below matriculation	22.53	15.64
Matriculation and above	0.78	2.00
Not recorded	0.02	0.08
TOTAL	100.00	100.00
Number in sample	22,048	789

	Sample Two	
	Employed	Unemployed
Illiterate	68.56	64.32
Literate below matriculation	30.33	31.44
Matriculation and above	1.08	4.18
Not recorded	0.03	0.06
TOTAL	100.00	100.00
Number in sample	15,384	352

	Sample Three	
	Employed	Unemployed
Illiterate	95.38	96.63
Literate below matriculation	4.55	3.01
Matriculation and above	0.07	0.27
Not recorded	---	0.09
TOTAL	100.00	100.00
Number in sample	6,664	437

*Institute of Applied Manpower Research, Fact Book on Manpower (New Delhi, Government of India Press, 1963), pp. 41-43.

Source: National Sample Survey, Draft Reports Number 87, 88.

TABLE 3 - 4
(cont.)

URBAN	Sample One Employed	Unemployed
Illiterate	42.58	23.74
Literate below matriculation	45.59	57.88
Matriculation and above	11.65	18.38
Not recorded	0.18	---
TOTAL	100.00	100.00
Number in Sample	10,724	437

	Sample Two	
Illiterate	34.26	15.46
Literate below matriculation	52.21	65.15
Matriculation and above	13.34	19.39
Not recorded	0.19	---
TOTAL	100.00	100.00
Number in Sample	9,114	367

	Sample Three	
Illiterate	83.69	63.37
Literate below matriculation	12.87	23.10
Matriculation and above	3.29	13.53
Not recorded	0.15	---
TOTAL	100.00	100.00
Number in Sample	1,610	70

unemployed in this category was considerably higher than the percentage who were employed.

For illiterate persons, in rural areas the percentage unemployed is very similar to the percentage employed. The picture changes radically for the urban sample. Here the percentage of the illiterate who are unemployed is distinctly lower as compared to the percentage of the illiterate who are employed. This is in marked contrast to the educated, both below and above the matriculation standard.

The Five Year Plans

The First Five Year Plan, which started in 1951, placed relatively little emphasis on education. Planners felt that India should concentrate on investment in material resources, and the development of human resources could be postponed and left primarily in private hands. Most economic development planners have given only peripheral consideration to the analysis of human resources. While they recognize that some investments in education are "economic" in that they directly promote economic growth, they contend that other expenditures for education and human resource development are primarily "social investments" and should be determined residually.⁷⁰

⁷⁰ Paul N. Rosenstein-Rodan, "Evaluation of a Short-Term Development Plan," Report of the Meeting of Panel of Experts (Santiago, Chile: Organization of American States, 1962), p. 42.

Mahalanobis, an influential Indian statistician who opts for wholesale commitments to large-scale industrial development in terms of "heavy industrial machinery, heavy electrical equipment (turbines, generators, switch and transmission gear)"--in short, capital equipment--and "the putting of idle hands to work" within the country through the "expansion of small scale and village industries (which) would create employment all over the country" feels that education has the residual role of communication between government and the people. He says:

It is necessary, of course, for Government to make policy decisions; but this by itself would not be sufficient because the implementation would depend on securing the willing cooperation or at least the concurrence of millions of persons in the villages. In the beginning, the organization of agriculture and small scale production, which may be called the "diffuse" sector, would be far more difficult than establishing large scale industries. The approach must be through institutional changes, spread of education (*italics mine*), improvement of communication, etc., and above everything else, by carrying conviction to the masses that Government is doing its best for national development.⁷¹

At the time of the formulating of the First Five Year Plan, the planners investigated the financial requirements for educational expansion. They wrote:

The Committee on the Ways and Means of Financing Educational Development in India estimates that a national system of education providing education

⁷¹P. C. Mahalanobis, Talks on Planning op. cit., p. 69.

for 100 per cent of the children of the 6-14 age group, secondary education for 20 per cent of those coming out of the first stage, university education for 10 per cent of those passing out of High Schools, technical education on a modest scale and other minor items - when it comes into full operation, will require an annual expenditure of nearly Rs. 400 crores. In addition, for basic and High Schools only approximately Rs. 200 crores will be necessary to train 27 lakhs of teachers that will be required and Rs. 272 crores for buildings. The total number of teachers in 1949-50 was about 7 lakhs, most of whom would require retraining to fit into the schemes of educational reorganization. No authoritative assessment exists of our present resources in buildings but it is common knowledge that most of the buildings at least of the primary schools are very inadequate for the purposes for which they are used.⁷²

What education finally did receive from the First Five Year Plan was the total provision of Rs. 169.0 crores, ("Rs." means rupees, "crores" means tens of millions) of which Rs. 152.9 crores were utilized. The largest share, 55 per cent, was allocated to primary education in keeping with the constitutional requirement that by 1960 free and compulsory education for all children of the 6-14 age group be provided. Technical education was allocated 13.2 per cent in recognition of the great needs of the various industrial projects in the Plan.⁷³ (See Table 3 - 5.)

⁷²Government of India, First Five Year Plan (New Delhi: Government of India Press, 1950), p. 529.

⁷³S. N. Mukhopadhyaya, "Is a planned approach to the integration of education and training with economic development desirable and/or possible? What has been the experience of India?" Mimeographed Chapter of future book, Economics of Education in Planned Development of India (Central Institute of Education, New Delhi, 1965).

TABLE 3 - 5
Distribution of Outlays on Education*

	<u>Amount in Crores of Rupees</u>		
	First Plan Actual	Second Plan	Third Plan Estimated
Elementary Education	84.80	87.04	109.00
Secondary Education	20.20	48.00	88.00
University Education	13.70	45.00	82.00
Technical, Vocational Education	20.20	47.72	142.00
Cultural Programs		4.00	10.00
Other Educational Schemes	14.00	24.00	29.00
Totals	152.90	255.76	560.00

*S. N. Mukerji, Administration of Education in India (Baroda: Acharya Book Depot, 1962), opp. p. 70, Chart 3.

Sources: The Government of India, The Five Year Plans, I, II, III (New Delhi: Government of India Press).

TABLE 3 - 5
(cont.)

	<u>Percentage</u>		
	First Plan	Second Plan	Third Plan
Elementary Education	55.0	34.0	37.4
Secondary Education	13.2	18.8	15.7
University Education	8.9	18.7	14.6
Technical, Vocational Education	13.2	17.6	25.4
Cultural Programs		1.6	1.8
Other Educational Schemes	9.7	9.3	5.1
Totals	100.00	100.00	100.00

Even this limited budget for education, in the face of the grave needs outlined by the Committee on Ways and Means of Financing Educational Development in India, raised educational percentages appreciably. For example, the percentage of the age group 6-11 who attended school rose from 42.7 per cent to 51.0 per cent. State allotments tended to compensate for the small allowance provided for secondary and university education, and technical education thrived on the 13 per cent provided in the budget as technical school buildings rose by a third, and the number of graduates almost doubled. (See Table 3 - 6.)

In the course of the First Five Year Plan, India realized that outlays on productive investment are not, in themselves, likely to be successful unless they are supported by a substantial expenditure on the provision of social capital--on the infrastructure of a developing society. In the Second Five Year Plan, therefore, the planners revised their position somewhat and stated:

The system of education has a determining influence on the rate at which economic progress is achieved and the benefits which can be derived from it. Economic development naturally makes growing demands on human resources and in a democratic set-up it calls for values and attitudes in the building up of which⁷⁴ the quality of education is an important element.

It is shown in Table 3 - 6 that in the Second Five

⁷⁴Government of India, Second Five Year Plan (New Delhi: Government of India Press, 1955), p. 500.

TABLE 3 - 6
Achievements and Targets, Five Year Plans*

Activity	1950-51	1955-56	1960-61	1965-66
Number of pupils (6-11) in '000's	19,200	25,200	22,000	50,400
Percentage of age group	42.7	51.0	60.0	80.0
Number of pupils (11-14) in '000's	3,100	4,300	6,100	10,000
Percentage of age group	12.9	16.3	22.6	30.0
Number of pupils (14-17) in '000's	1,200	2,000	3,000	4,400
Percentage of age group	5.4	8.1	12.0	15.0
Number of primary/junior basic schools	209,700	278,135	354,900	500,000
Number of middle/senior basic schools	13,596	21,730	30,000	45,000
Number of high/higher secondary schools	7,288	10,838	14,000	18,000
Number of multi-purpose schools	---	367	1,600	1,800
Number of engineering and technological colleges	49	64	97	117
Number of polytechnics	86	102	208	273
Intake in engineering and technological colleges (degree level)	4,119	5,937	13,000	19,400

TABLE 3 - 6
(cont.)

Activity	1950-51	1955-56	1960-61	1965-66
Intake in polytechnics (diploma level)	5,903	9,397	24,000	39,918
Outturn of graduates in engineering and technology	2,198	4,017	5,310	---
Outturn of diploma holders in engineering and technology	2,478	4,072	10,397	---

*S. N. Mukerji, Administration of Education in India (Baroda: Acharya Book Depot, 1962), opp. p. 70, Chart 3.

Sources: The Government of India, the Five Year Plans, I, II, III (New Delhi: Government of India Press).

Year Plan secondary and university education received the highest priority in terms of additional investment, and expenditure on elementary education continued at about the same level. The need for men and women with high academic and professional qualifications to man the machinery of government and meet the country's manpower requirements in industry, commerce and public service were to be fulfilled. It was generally agreed that the need to ensure that an adequate proportion of the population received secondary and university education was of such high priority that in the Second Plan it was put before the goal of universal primary education, as, for financial reasons, the two were not yet compatible.

The impact of the Second Five Year Plan raised primary school attendance levels to 60 per cent, middle school levels to 22.6 per cent, and high school levels to 12.0 per cent of their respective age groups. Technical education received an even greater share, and its effects were immediate; the doubling of polytechnics, and the more than doubling of diploma holders in engineering and technology.

As India advanced with the Second Five Year Plan, the need for integrating economic investment with educational planning became clearer. On the one hand large numbers of her people continued to be unemployed (150,000 college graduates were unemployed in 1960);⁷⁵ on the other hand,

⁷⁵Mukhopadhyaya, op. cit.

her projects suffered in general from a dearth of skilled labor and trained manpower. It was realized more than ever that the schemes for economic investment in underdeveloped countries must be accompanied by a proportionate and appropriate educational effort. It was held that investment in schools need not be necessarily paid for out of the annual budget by government loans or other specific financing.

The Theory of Investment in Human Capital
Applied to India

In the course of the First and Second Five Year Plans net capital formation in India amounted to some Rs. 12,000 crores. This could not have been explained by the techniques for capital output ratios. If investment had a marginal productivity of 3 per cent, it would have produced a growth in annual national income of some Rs. 360 crores; if its marginal productivity were 4 per cent, it would have produced a growth in national income of some Rs. 480 crores. In point of fact, national income (in 1958-59) grew by over Rs. 3,000 crores. Hence, if the norms currently used in cost-benefit analysis are correct, the role of investment in economic growth is quite small. This is the argument presented by economists in India.⁷⁶

What at first glance differentiates the argument

⁷⁶Mukhopadhyaya, op. cit.

given above from the figures used by Schultz (see Table 2 - 2) is that the labor input is missing in this case. All output except that to be credited to capital is credited to human factors, such as "improved technical skills, education, dissemination of information, improved management of production processes, etc."⁷⁷ The key to the analysis lies in the view that the marginal productivity of labor is considered to be near zero in India, hence any output other than that attributed to capital can be attributed to the change in labor output, the improvement in labor, which is human capital.⁷⁸

The rate of return on investment has been calculated to be some $3\frac{1}{2}$ per cent,⁷⁹ which brings it between the figures that Mukhopadyaya uses. Given all the assumptions in the case, such as the validity of these figures, and the actual extremely low marginal productivity of labor, the large residue would more than make up for any inflation effect within the ten years. A slightly higher than zero marginal productivity would still not use up all the surplus in such

⁷⁷Ibid., p. 8.

⁷⁸The writer is indebted to Professor Jeffrey Williamson, of the Department of Economics at the University of Wisconsin for the clarifying of this point in Professor Mukhopadyaya's argument.

⁷⁹Deskmukh, C. D., "Tensions of Economic and Social Development in Southeast Asia," from A Study of World Tensions and Development (ed.) Lester B. Pearson (New York, 1962, Dodd, Mead and Co.), pp. 125-126 (at the Conference on Tensions in Development, Oxford University, 1961).

education, within the requirements of our needs.

Individual Rates of Return to Investment in Education

Indian economists are also greatly influenced by current studies on individual returns from investment in education in the United States. Mukhopadyaya, for example, cites Greenough's figure of seven per cent as the return on education spent sensibly, Renshaw's average return to education in the United States of between 5 and 10 per cent between 1900 and 1950, Becker's estimate of 12.5 per cent as the return from a college education for an urban white male in 1950, and Schultz's rates of return of 35, 10 and 11 per cent from elementary, high school and college respectively. Mukhopadyaya also cites Harberger as having analyzed the Indian situation and subsequently arrived at the conclusion that education was responsible for a substantial part of India's economic growth.

At the same time, in an admittedly exploratory study, Harberger has expressed some doubt that there is necessarily a greater return to investment in education in India over investment in physical capital.⁸⁰ He examined Indian secondary and higher education, and while he admits to the possibility of debate on certain points in his treatment (for

⁸⁰Arnold Harberger, Investment in Man versus Investment in Machines: The Case for India. Paper read at the Conference on Education and Economic Development (University of Chicago, April 4-6, 1963).

example, he rejects the given figures on direct costs of education in India as too low), concludes that at the secondary and university levels Indian education does not yield as high a return as investment in physical capital. With all adjustments (including the imputation of 20 per cent of the wage bill to capital), Harberger estimated the marginal productivity of physical capital equipment to be between 17.2 per cent and 26.1 per cent. These figures should be compared with the estimates of 10-12 per cent for investment in secondary education, of 16-17 per cent for higher education, and of 14-15 per cent for ten years of secondary and higher education taken together.

It must be realized that Harberger's last paper dealt with secondary and university education, not primary and general education; that his refusal to accept given figures on direct costs of education is based on the assumption that these figures are out of line; and that there are hidden costs which must be explored and which might very well more than compensate for the difference between direct costs as officially stated and Harberger's assumption that direct costs of education equal 50 per cent of foregone income. He assumes this as a conservative estimate based on American university expenses.

Future Plans for Education in India

What are the prospects in the Fourth Five Year Plan?

Education Planner Saraf emphasized the tie-in with economic development.⁸¹ He cited the population explosion as responsible for what planners thought and what happened. He spelled out the backlog in buildings, the 40 per cent shortage of teachers in science and mathematics, the fact that from 5 to 8 states were still backward. It was still not possible to do anything for vast groups of backward lower classes, he emphasized. The tie-in with economic development was approached under three headings: one, there had been no collaboration between education and economic planners, and too much stress on industrialization, without more education being geared to agriculture; two, there was wastage of talent to the extent of from Rs. 50 to 60 crores a year because of wastage in education; and three, he advocated multiple schools where secondary education could not be universal like elementary. He reiterated that there was too much growth in universities, and that actually, the absolute number of illiterates increased at a faster rate than the number of literates, and that only 10 crores of persons (100 million) were really literate. Recognizing that teachers were the backbone of educational improvement, Saraf felt that educational institutions were not attracting the best talent and expressed the hope that increases in

⁸¹S. Saraf, Director of Education, Planning Commission, Government of India, Lecture at the Central Institute of Education (New Delhi, March 31, 1965).

salary could be linked with functional improvement so as to attract the most competent teachers, "the really good."⁸²

Saraf spoke of social justice in the question of students handicapped by poverty. He mentioned revolving funds rather than free education--loans rather than gifts. He cited Madras and Maharashtra states as helping the other halves of their communities. The technology of education was mentioned in terms of correspondence courses, radio and television, which although not a perfect substitute for a live teacher, could extend the teacher's influence.

Saraf attacked the drop-out rate in elementary education which he cited at 30-40 per cent. He felt that parents were largely responsible for the drop-out problem. He mentioned the question of housing for male teachers in rural areas with staff quarters.

At the end of the Fourth Plan, Saraf felt that 93 per cent of the 6-11 age group would be in school. To prepare for 93 per cent, capacity would have to be raised to 123 per cent of present capacity. He estimated that 42 per cent of the children in the age group of 11-14 would be in school, which would bring the percentage of the age group of 6-11 to 78 per cent in school by 1971. (It will be remembered that the aim of the First Five Year Plan was to have 100 per cent of all children between 6 and 14 in

⁸²Saraf, op. cit.

school by 1960.)

Saraf foretold massive investment in education on the part of India in the Fourth Five Year Plan, including 2,300 crores of rupees in industrial education and 700 crores in various educational activities. There will be 1,400 crores in orthodox educational development, with 300 to be added each year. This does not include another 600 crores in medical, agricultural and scientific research. He emphasized that all this expansion will not take place at the cost of quality.

Causes for Deficiencies in Indian Education

Mukhopadhyaya ascribes the main reason for deficiencies in Indian education to finance.⁸³ Money is not being spent on the right objects; too much investment which should go into such things as education for human capital investment or industry for physical capital investment is going into real estate. He quotes Rostow with regard to this misinvestment, as something that should take place only after the stage of take-off has been accomplished, and gives the example of Britain's delay between the stage of maturity and mass-consumption because of too much investment by the moneyed classes in land.

Mukhopadhyaya also attacks the myth that masses of

⁸³Mukhopadhyaya, op. cit.

unskilled workers can always be drawn upon to produce labor. In fact it is "the dearth in skilled labor" that slows down growth. He draws an interesting parallel between the object of policy with regard to capital and what he believes should be its object with regard to labor. With regard to capital, the object of policy is to prevent concentration of economic power and the growth of monopolistic tendencies, while it channels funds into medium and small-scale enterprise. With regard to labor, likewise to prevent the concentration of income, he advocates investment in large scale programs of training to insure that there is rapid growth of opportunities in both public and private sectors.

Another typical reason for blame in the case of Indian development is that laid on lack of attention being given to agricultural production. Mukhopadyaya believes that the right incentives are not there. "The answer to the economic problem of India lies in the type of agrarian revolution that gives the multitudes of her rural population voluntary occupation and attracts them to productivity through opportunity." He believes that "a reformed land tenure structure would support a reformed land tax structure" which, in turn, would support public capital investment in rural education. He would have reforms "place agriculturists in the position of decision makers and controllers of the economy of the farms they hold."⁸⁴

⁸⁴Mukhopadyaya, op. cit.

Another viewpoint that is gaining acceptance is the one of population control. Gopalaswami⁸⁵ states that education expenditure rose from Rs. 114 crores in 1950-51 to Rs. 337 crores in 1960-61 and the enrollment of pupils in schools increased (shown in Table 3 - 7).

Gopalaswami draws the conclusion that by 1960-61 India had provided school accommodation and teachers for 34.3 million children from grades I to V. If the birth-rate had been halved in 1947-57 India would have been able to universalize education at the beginning of the Third Five Year Plan (1961) and would not have needed any increase in facilities because the number of children to be enrolled in 1966 would have only been 33.2 million. (See Table 3 - 8.) Further increases would have been small (35.9 and 39.1 million in 1971 and 1976 respectively). Expenditure on primary education would have been stabilized and resources thus freed would have been available for achieving more rapid progress with education at higher levels. He goes on to say:

As it is, we may double the number of teachers employed as well as school accommodation available at the beginning of the Third Plan and we shall still be short at the end of the Fourth Plan. On the basis of uncontrolled births, we stand committed to a fantastic race. Following the admonition given by the Red Queen to Alice, we shall have to run as hard as we can to stay put in the same place. And we must run harder than that to get somewhere.⁸⁶

⁸⁵R. A. Gopalaswami, Planned Development and Population Growth (Institute of Applied Manpower Research, November 1963), pp. 15-17.

⁸⁶Gopalaswami, op. cit.

TABLE 3 - 7
Enrollment of Pupils*

Classes 1	1950-51 (Millions) 2	1960-61 (Millions) 3	Percentage increase in ten years 4
School-years (I to V)	19.2	34.3	79
School-years (VI to VIII)	3.1	6.3	100
School-years (IX to XI)	1.2	2.9	138
Total	23.5	43.5	85

*R. A. Gopaldaswami, Planned Development and Population Growth
(Institute of Applied Manpower Research, November 1963),
p. 16.

Rapid as it is, this rate of growth has not sufficed to meet minimum requirements. The Constitution of India enjoins that free and compulsory education shall be provided for all children up to the age of 14 years. This goal, however, appeared so difficult to reach that it has been necessary to concentrate, in the first instance on the more modest aim of universalizing primary education in the first five school-years. Even this limited purpose still remains unfulfilled. (Italics mine.) This too represents a consequence of uncontrolled birth as may be seen from the figures in Table 3-8.

TABLE 3 - 8

Number of Pupils to be Enrolled in School -

Years I to V*

Years 1	As estimated on the basis of uncontrolled birth (in millions) 2	As might have been if the birth rate had been halved during 1947-57 (in millions) 3
1961	56.1	38.0
1966	64.7	33.2
1971	73.1	35.9
1976	83.0	39.1

*R. A. Gopalaswami, Planned Development and Population Growth (Institute of Applied Manpower Research, November 1963), p. 16.

Gopalaswami clinches his arguments with evidence that India's efforts in agriculture are as great as can be expected; 3 per cent annual growth in agriculture, which ranks third among the ten largest countries of the world. He deprecates talk of doubling agricultural production with the observation that while the United States doubled its agricultural production, this record was performed within not less than twenty years between the decade 1866-75 and the decade 1886-95. He claims this was "almost entirely due to the occupation of empty lands and the breaking up of fertile virgin soil for new cultivation."⁸⁷

Summary

In India educated manpower has increased at a remarkable rate, unfortunately overshadowed by the explosive increase in population. But while quantitatively, India could have reached her goals, an influential knowledgeable Indian has some comments to make on the question of quality in Indian education. He says:

There is still another aspect to the effectiveness of an educational system. Education has aptly been described as "investment in man," and its effectiveness will, therefore, have to be judged, like investment in any other sector, by the quality of the goods it produces. The acid test by which the educational system in India will be ultimately judged is whether, and to what extent, it really produces the type of individual the country needs.

⁸⁷Ibid.

What type of an individual does the country need? The answer is provided by the type of society that is to be created. India has decided to eliminate poverty and to create a new order based on freedom, justice and equality. It has also deliberately chosen the democratic way of life and the socialistic pattern of society. If such a social order is to be ushered in and stabilized, citizens imbued with several important values are needed. These would include: love of the motherland combined with a deep faith in its "unity in diversity;" a catholic and tolerant attitude towards others; respect for and understanding of the democratic way of life; love of discipline and capacity for self-restraint; interest in science and a scientific outlook; a faith in the dignity of labor and capacity to work hard and efficiently; and a basic humanism that will scorn all privileges based on caste, race, color, sex or religion.⁸⁸

It may very well be that while India has progressed along the quantitative path to spread education, although this is hidden by the explosive spread of her population, the question of quality still has to be taken into consideration.

⁸⁸Naik, op. cit., p. 844.

CHAPTER IV

INDIAN EDUCATION: CASE STUDY OF A VILLAGE

At the time this study was initiated it was thought that information gleaned through official documents of the Indian Government and the United Nations would suffice. After examining these sources the idea was born of going to New Delhi itself for the most up-to-date information.

Professor Marshall Clinard of the University of Wisconsin, and lately associated with the Ford Foundation in India, was chiefly responsible for stimulating this idea. Soon after, it was learned from Mr. K. N. Sundaram, Director of Indian Applied Manpower Research, Government of India, New Delhi, who was passing through Madison as a part of his visit to the United States in his official capacity, that such information was available.

Then came the idea that something beyond the Central Government might be looked at - a foray perhaps into the vast hinterland of the agricultural masses of India, the 600,000 villages. The author was fortunate to find on this campus, in the person of Professor Joseph W. Elder, a source of information and contacts in a state which was Hindi speaking. Hindi is spoken by the majority of the Indian people and is destined to become the national language, besides being a language in which the writer is

fluent. For the same reasons as Professor Joseph Elder¹ gives in his study, the village of "Raaipur" seemed well suited to the study of Indian education in the "raw," as it were, and in the special nexus of things to come - an Indian village tied in with a modern sugar factory within the special relationship of the Hindu ethic.

Professor Elder's in-depth sociological study of the village provided an ideal background for a study of the place of education in the society and traditions of the area. The author's own background of living in a Hindi speaking area, where his father was an electrical engineer attached to a factory network that maintained the railroad in that area, also complemented such background information. Thus plans were laid and fulfilled for visiting this area, drawing upon the contacts of Professor Joseph Elder and looking into education in that microscopic area.

What will be presented is essentially a direct method of observation of a small section of a large state. What can be concluded from these observations reflect at least in part, the point of view of the author. Critics may be justified in questioning the application of any conclusions

¹Joseph W. Elder, Industrialism in Hindu Society: A Case Study in Social Change (Unpublished Ph.D. Dissertation, Harvard University, Cambridge, Mass., 1959).

from this study to the whole of India, to the State in question, or even to the area under study, unless it is borne in mind that the area under study represents a special relationship between a modern sugar mill and a group of villages which supply it with sugarcane and workers.

The village of "Raaipur" and the Seeta Ram sugar factory are located in the western corner of the State of Uttar Pradesh. The State of Uttar Pradesh had a population of 73.75 million in 1961 in an area of 113,654 square miles with a density of 649 per square mile, as compared to 439 million people in an area of 1,264,341 square miles with a density of 370 per square mile for the nation as a whole.² There are 12.9 per cent of its people who are classified as urban, as compared to 18 per cent for the nation.³ Its population increased by 16.66 per cent during the decade 1951-61, while the whole nation increased by 21.50 per cent.⁴ The working population of the State in 1961 was 39 per cent

²Institute of Applied Manpower Research, Fact Book on Manpower (New Delhi: Government of India Press, 1963), p. 4.

Source: India 1963 - Compiled by Research and Reference Division, Ministry of Information and Broadcasting, Government of India, New Delhi.

³Ibid., p. 6.

Source: Census of India, 1961 - Paper No. 1 of 1962.

⁴Ibid., p. 11.

Source: Census of India, 1961 - Paper No. 1 of 1962.

⁵Ibid., p. 79.

of its total population, with 60 per cent of its men and 18 per cent of its women in the labor force, while the figures are 43 per cent, 57 per cent, and 28 per cent, respectively, for all of India.⁵

In 1961, Uttar Pradesh had a literacy rate of 17.6 per cent (27.3 per cent males, 7 per cent females), as compared to 24.4 per cent for all of India (34.4 per cent males, 12.9 per cent females). While this represents an increase from the literacy rate of 10.8 per cent which prevailed in 1951 (17.4 per cent males, 3.6 per cent females), the rank of the State fell from 17 to 19 during the same period.⁶ As explained previously, there was a change in the definition of the term during this period. In 1951, illiterates covered persons of all ages, including those below the age of four, who could not read and write a simple letter; in 1961 it only considered persons above the age of four.⁷

Formal Education

Primary Education

Primary school (grades 1 through 5) students in Uttar Pradesh dropped in number between 1950-51 and 1955-56,

⁵Ibid., p. 24.

Source: Census of India, 1961 - Paper No. 1 of 1962.

⁶Ibid., pp. 82, 84.

Source: Census of India, 1961 - Paper No. 1 of 1962.

⁷Ibid., p. 79.

from 2.818 million (2.41 million boys and 408,000 girls) in 1950-51 to 1.805 million (2.261 million boys and 544,000 girls) in 1955-56. The provisional figure for 1960-61 is 4.093 million pupils made up of 3.225 million boys and 868,000 girls. The target for 1965-66 is 6.65 million pupils, with 4.5 million boys and 2.15 million girls. The ratios for the three years 1950-51, 1955-56 and 1960-61, in terms of pupils per 1,000 of population, are 45, 41, and 55, while the corresponding ratios for all India are 55, 63 and 78, respectively.⁸

Middle School Education

Middle School pupils (grades 6 through 8) in Uttar Pradesh rose in number between 1950-51, 1955-56 and 1960-61. The respective numbers were 502,000 (460,000 boys and 42,000 girls), 636,000 (568,000 boys and 68,000 girls), and 824,000 (702,000 boys and 122,000 girls). The target figure for 1965-66 is 1.16 million (one million boys and 160,000 girls). The ratios for the three years 1950-51, 1955-56, and 1960-61, in terms of pupils per 1,000 of population, are 8, 9 and 12, respectively, while the corresponding ratios for all India would be slightly higher.⁹

⁸Ibid., pp. 95, 101.

Sources: (1) Ministry of Education.
(2) Third Five-Year Plan.

⁹Ibid., pp. 96, 103.

Sources: (1) Ministry of Education.
(2) Third Five-Year Plan.

High School Education

High School pupils (grades 9 through 11) in Uttar Pradesh rose in number between 1955-56 and 1960-61. The respective numbers were 319,000 (293,000 boys and 26,000 girls) and 428,000 (381,000 boys and 47,000 girls). The target figure for 1965-66 is 740,000 (660,000 boys and 80,000 girls). The ratios for the two years 1955-56 and 1960-61, in terms of pupils per 1,000 of population are 5 and 4, while the corresponding ratios for all India would be slightly higher for 1955-56 and more so in 1960-61, as other states stepped up their programs.¹⁰

University Education

Uttar Pradesh ranks second among the Indian States in the number of students in universities and colleges per million population. The provisional figure for 1962-63 is 3,615 students per million population, second only to West Bengal which had 4,141 students per million population. (The Federal Territory of Delhi has 9,092 students per million population.) Uttar Pradesh is roughly 50 per cent in excess of the national average of 2,785.

Considering teacher-pupil ratios in different universities for the years 1955-56 and 1960-61, Uttar Pradesh

¹⁰Ibid., pp. 97, 103.

Sources: (1) Ministry of Education.
(2) Third Five-Year Plan.

has State Universities such as Agra University (1:13.4 and 1:17.6 for the two years in question), Allahabad University (1:24.1 and 1:20.3) and Lucknow University (1:18.2 and 1:19.3) and denominational universities such as Banaras Hindu University (1:17.7 and 1:14.1) and Aligarh Muslim University (1:11.4 and 1:13.9). The Indian average for Teacher-pupil ratios in universities is 1:18.0 and 1:17.5 for the two respective years.¹¹

Manpower Training

Manpower in Engineering

The out-turn of engineering graduates in Uttar Pradesh during 1962 was 766 and the out-turn of engineering diploma holders in Uttar Pradesh in 1962 was 1,080; all India figures are 8,426 and 12,046, respectively. While the intake of students in engineering colleges and polytechnics, per 100,000 population, in 1961 was 1.5 for engineering colleges and 3.0 for polytechnics, the out-turn of graduates in that year was 1.10 for engineering degree holders and 1.12 for diploma holders, per 100,000 population. The combined out-turn of degree holders and diploma holders was 2.22 per 100,000 of population in 1961, which was below the national average of 3.96.¹²

¹¹Ibid., pp. 134, 143.
Source: University Grants Commission.

¹²Ibid., pp. 166, 167, 170.
Source: Ministry of Scientific Research and Cultural Affairs.

Manpower Training in Agriculture and Veterinary Science

There has been a constant rise in the number of agricultural graduates in Uttar Pradesh since 1954. From 229 graduates in that year, the number more than doubled by 1959, when it reached 509. It more than doubled again by 1961, when the number reached 1,132. The latest figure of annual production of agricultural graduates shows 1,045 for 1962, the largest of any state and more than one-third of the total for the entire country.

The out-turn from veterinary colleges in Uttar Pradesh shows a five-fold annual increase from 1954 to 1959. The number was 18 in 1954, 51 in 1956, 87 in 1957, and 106 by 1959. It dropped to 85 by 1960 and topped 110 by 1961. The latest count of annual production of veterinary graduates shows 80 for 1962, which was less than one-twelfth the national figure.¹³

Manpower in Medical Training

There were three medical colleges in Uttar Pradesh in 1960, and their intake of students was 396. The target for 1965 is to have seven medical colleges with an intake of 600 students. Figures for the intake of medical students per 100,000 population show that Uttar Pradesh had 0.5 in 1960 and is aiming at the figure of 0.7 by 1965. When it

¹³Ibid., pp. 188, 189.

Source: Indian Council of Agricultural Research.

comes to data on the estimated number of active doctors and their ratio to population in 1960, Uttar Pradesh has 7,000 doctors, which gives it the doctor-population ratio of 1:10,354. When one breaks down these figures, there are 6,670 doctors in urban areas and 330 doctors in rural areas, giving ratios of doctor to population of 1:1,397 in urban areas, and 1:191,455 in rural areas, which is moderately higher than the national average of 1:1,238 in urban areas and considerably higher than the national average of 1:45,327 for rural areas.¹⁴

Manpower in Teaching

The last year for which there are figures from the State of Uttar Pradesh is 1958-59. For reasons of comparison the same period was taken for the nation as a whole.

Teachers in pre-primary grades numbered 290 in 1958-59 as compared with 2,990 for the whole country. Teachers in primary grades were 88,556 in number, with 78.5 per cent trained and with a pupil ratio of 1:40 as compared with 695,000 primary school teachers in all India, with 63.7

¹⁴ Ibid., pp. 195, 196, 198, 200.

Sources: (1) Planning Commission.
(2) Planning Commission in Perspective
Planning Division - Study No. 15 -
"Doctors in India."

The rural/urban distribution of doctors has been obtained by applying the estimates for the year 1956 on the basis of information given in address lists of doctors and pharmaceutical firms.

per cent trained and with a pupil-ratio of 1:33. Teachers in middle school grades numbered 21,574 with 78.5 per cent trained and a pupil-ratio of 1:22, whereas the corresponding figures for the nation were 200,000 pupils, 63 per cent trained, and a pupil-ratio of 1:25. Finally, at the high and higher secondary school level, there were 32,439 teachers in Uttar Pradesh, with 66.3 per cent trained and a pupil-ratio of 1:22, while the numbers of teachers in India was 245,000 with 63.2 per cent trained and a pupil-ratio of 1:25. It can be seen that while the pupil-ratio at the primary level is higher for the State than the figure for the nation, the percentage of trained teachers is higher in the face of large enrollments. The hidden factors in the anomaly are the basic schools which require less in the way of teacher-training and to which more children flock, while very often private schools take care of pupils whose parents opt for the regular educational courses. The drop-out by the time middle school is reached now yields correspondingly lower enrollments, lower pupil ratios and higher values for teacher training. Likewise, the picture for the high and higher secondary school shows even smaller numbers compared to the national average, with a smaller pupil ratio and a slightly higher percentage of trained teachers.

Teacher training colleges rose from 14 to 15 in the years between 1955-56 and 1958-59, while teacher training

schools rose from 97 to 108 for the corresponding period. National figures for the same period are from 107 to 234 for teacher training colleges, and from 930 to 974 for teacher training schools. So while teacher training colleges and schools rose by about 7 per cent for training colleges in the State of Uttar Pradesh, they rose by over 100 per cent for the whole country for the same period; while teacher training schools rose by about 8 per cent in the State, they rose about 5 per cent for the country as a whole.¹⁵

Some Features of Educational Administration

In Uttar Pradesh

Underlying Ideas

The tone of educational administration in the State seems to have been set by the first codified rules of grant-in-aid issued on July 14, 1858 during British rule by M. S. Reid, who became the first Director of Public Instruction. They read as follows:

Every school in which some secular instruction is imparted is eligible to receive the grant, it being provided that the grant shall in no case exceed the sum expended on the school from private sources. Schooling fees should be paid by at least two-thirds the number of pupils on the roll.¹⁶

¹⁵Ibid., pp. 118-129.

National Council of Educational Research and Training, Ministry of Education, Review of Education in India (New Delhi: Government of India Press, 1961), pp. 642-651.

¹⁶L. Mukherjee, "Uttar Pradesh," in S. N. Mukerji, Administration of Education in India (Baroda, Acharya Book Depot, 1962), p. 515.

Mukherjee spells out the immediate effect of such grants-in-aid in the dominance of missionary schools. He states that:

the condition of requiring half the sum of maintenance from private sources made it difficult for non-missionary institutions to comply with, and it is no wonder therefore that in 1882, when there were 17 non-government high schools under Indian management, there were as many as 104 under the management of Christian Missions.¹⁷

The attainment of independence has also brought in new problems, with more and more schools looking for grants from the State government. While financial contributions to mission schools from foreign lands show a fall (they become eligible for state grants if they open their doors to all communities, and hence make religious instruction optional), and public donation to education is dwindling due to the gradual elimination of landlordism ("zamindari") and due to uncertain economic conditions, the number of schools is increasing due to the rapid growth of the number of pupils of school age.¹⁸ For example, we are told,

Of 44,724 recognized educational institutions in the State in 1958-59, 3.7 per cent were managed by the government, 80.1 per cent by local boards and 15.6 per cent by private bodies (10.0 per cent aided and 5.6 per cent unaided).¹⁹

¹⁷Ibid., p. 515.

¹⁸Ibid., p. 539.

¹⁹U. P. Government, "Shiksha Kee Pragati," Vol. II (1960), p. 9.

Administration of Primary Schools

Out of 36,363 primary schools in the State, as few as 857 are purely government institutions.²⁰ Corporations and municipalities run 2,206 schools of their own. Each corporation or municipality has its own education committee with a superintendent of education as its chief education officer. The municipal schools are crowded with children of poor communities. Their teachers are poorly paid and they are generally ill-equipped. In rural areas, primary schools number 25,152. They were under district boards and at present under their successors, the "antarim zilla parishads." Their teachers are poorly paid and receive less than the peons in government schools. Even this meager salary is often left in arrears due to mismanagement. Consequently, the teachers have little enthusiasm for their work. Guardians are also apathetic to education and withdraw their children from schools as early as possible. The majority of children leave schools before they reach the second grade and lapse into illiteracy again, with the result that only one-third of children of primary school going age (6-11) are attending schools in the State at present.

In contrast to these schools, there are as many as 9,148 privately aided primary schools, some of which are "just" primary departments of Anglo-Vernacular schools.²¹

²⁰ Mukherjee, op. cit., pp. 526, 527.

²¹ Ibid.

They charge tuition fees and also claim grants from municipalities on a per capita basis. A few of them have kindergarten and Montessori departments. Their tuition fees are very high. Hence only rich parents can afford to send their children to these schools. This helps these private schools to pay attractive salaries to their teachers and secure the services of such competent teachers as are not available in other types of schools. They compare favorably with private schools of the United States except that the private institutions of the United States do not receive grants from public funds.²²

Administration of Secondary Schools

Secondary institutions are of two main types - government and non-government. Out of a total of 1,444 higher secondary schools in 1958-59 as many as 127 were government schools. The teachers of these schools are government servants. They are appointed by the Public Services Commission and are governed by government service rules. The pupils' tuition fee is the only source of income of these institutions and the government bears the entire deficit. Mukherjee makes the interesting point that as much as 27.5 per cent of the entire budget is spent over these institutions, though they enroll only 9 per cent of the total clientele.²³

²²Ibid.

²³Ibid., p. 524.

Non-government institutions are managed by three bodies: (1) municipalities and corporations, (2) district boards or "antarim zilla parishads," and (3) private managements - aided or unaided. Municipalities or corporations maintain about 40 intermediate colleges and high schools, which are under the control of the education committees with the Municipal Education Superintendent acting as the manager. They receive state aids and are subject to government inspection. Municipalities and corporations are not generally short of funds and their teachers are paid regularly.

The second type of institutions are under the management of the district boards, or "antarim zilla parishads," which had been formed in 1958 for rural areas. These institutions are mostly junior high schools or former vernacular middle schools. It may be noted that the majority of secondary schools of the State are of this type. Due to the lack of funds the district boards have had to face huge deficits and teachers' salaries are not paid regularly. "The formation of antarim zilla parishads," Mukherjee feels, "has improved the situation somewhat but the financial condition is not yet as bright."²⁴

Mukherjee reserves his severest criticism for the non-government secondary institutions managed by private bodies, with the exception of missionary societies. He tells us,

²⁴Ibid., p. 524.

They resort to unfair practices. Their first efforts are directed to augment their fee income by increasing student enrollment. This is possible by showing a good percentage of passes in public examinations, which is unfortunately achieved by adopting certain questionable methods such as connivance at malpractices. In rural areas, however, it is not always possible to increase enrollments, and hence private managements sometimes compel teachers to sign for a pay and give them less, so that the expenditure of the school as shown in the annual return submitted to government through the district inspector of schools shows a higher figure than what is actually spent. But the worst sufferers are the teachers, who are forced to contribute "voluntarily" (though it is by no means "voluntary") for the welfare of the school. Sometimes the situation is partially eased by dispensing with the services of a well-paid teacher and by replacing him with a fresh recruit drawing a smaller pay. The saving is utilized for giving increments to others. Thus all these malpractices have their roots at the inability of private managements to meet the annual deficit.²⁵

Administration of University Education

Academic administration of higher education in the Uttar Pradesh is left to the universities and this state now has more universities than any other Indian State. Due to the rapid expansion of university education after 1947, the universities have widely changed from their completely autonomous characters as teaching (Allahabad University), affiliating (Agra University), and centralized (Banaras) institutions. There is some financial control over the universities, with greater control over the new government universities (such as the Engineering University at Roorkee)

²⁵Ibid., p. 525.

than over the private universities, over whom control is more indirect with some limited distribution of grants.²⁶

The Village

About 100 miles east of Delhi, in the flat fertile country of the Ganges River basin, in the State of Uttar Pradesh and the District of Huseinpur²⁷ lies Raaipur village beside the railway station of the Northern Railway, and alongside the Seeta Ram Sugarcane Factory. The village itself contains some 1,200 souls and is typical of villages in the area, with mudwalls predominating and large painted seals on outside mud walls at various corners of the village giving population information from the last census. Paths criss-cross between sections of the village (mahalas) where various castes live, with here and there a larger brick house belonging most often to a Jat (member of the highest caste in the village). There is electricity that crosses Raaipur from the sugar factory, with long undulating lines attached to posts here and there on their way out of the village and beyond. These power lines have been used to install an electric street light in the village, and provided electricity for some of the large brick two-storeyed houses. There are

²⁶Ibid., pp. 521-523.

²⁷Joseph Elder, Industrialism in Hindu Society: A Case Study in Social Change (Unpublished Ph.D. dissertation, Harvard University, 1959). In line with this work, names have conformed to the ones created by Joseph Elder.

courtyards with cattle standing at their troughs; there are hand-pumps strewn at strategic points between mahalas, which cater to members of their castes. In most cases open drains converge with pathways and collected pools of sewage, with festoons of flies and mosquitoes, complete the scene on hot afternoons. On the northern edge of the village, beside the pond which is seeded with fish, lies a poultry and hog raising station, all part of new development programs of the State. Across a few fields in a northwesterly direction lie the cremation grounds of the Hindus, while near the edge of the village are buried members of the Muslim faith, who constitute one-fourth of the population of the village.

The Factory:

Across fields of grain, in a southeasterly direction tower the buildings of the Sugarcane factory and distillery of the Seeta-Ram Mills. A macadam road separates shanty shops from the gates of the factory, beside which is the Post Office. During the sugarcane season this area is bustling with activity; creaking bullock carts and honking trucks, loaded down with sugarcane from all around the area, are continually wending their way into the loading zones of the factory. Swarms of children follow these carts and trucks, stealing cane, on which they chew and then strew the remnants of bark and pith over the dusty paths. Vendors

set up shop selling condiments, leaf-drugs, and Indian and European-type cigarettes, both outside the gates and within the entrances to the factory.

Inside the gates, on the left hand side is the primary school, a four-roomed verandahed bungalow, covered with corrugated sheeting and painted in white lime. Low walls separate the school from the road and enclose its 100 by 400 feet of area, which include outside toilets located next to the wall by the road. There are large trees in the play area. Within the school building, the corrugated sheets rise to an inverted V over walls, which rise to a bare seven or eight feet in height and serve to separate the rooms in the manner of partitions.

Opposite the school is the dispensary where the medical officer sees his patients, and further on, the road curves to enter the gates of the residence of the mill-owner, beautifully landscaped, complete with white tiger in glass case, and parked Chevrolet, in stark contrast with the destitute appearance of the rest of the area. Inside the high walls of this residential home, across a field of wheat, is the guesthouse, complete with its own kitchen, and further beyond are lodgings for servants, including chauffeurs, armed guards and washerman.

The road turns further south from the gates of the residential mansion toward the homes of lower executives of the factory. It continues past the impressive fountain-

like display of the aeration yard, where jets of water cool after providing cooling agents for the molasses in transformation into sugar. Then there is the impressive sugary building of the temple, complete with loudspeakers and microphones for evening services. Sacred Hindu words are embossed in vivid blue on white and pink. The homes of higher executives are east of a large field, while lower executives bring up the southern edges of the field.

One has to retrace steps and take a turn to the right to go past the offices of the sugar mill itself, and then further on round the edge of the walled-in factory grounds to enter the main factory. Here crowds of workers and vendors, sugarcane bullock cart drivers and truck drivers wait out their turns at having their produce weighed. The air is heavy with the odor of molasses, the dust of sugarcane bark, and the fumes of oil and gasoline engines. Inside, in the dark of the factory, the outlines of chain machinery and the smell of hot syrup penetrate into area after area, till one enters the office section where there are shelves cut into white-limed walls and glass doors, each with its padlock, and its clerks.

Once again outside the factory, the road crosses the railroad tracks southeastward next to the railway signal blockhouse. Rickshaw tricycles and teeming humanity wait for gates to rise and the chance to cross, alongside trucks and bullock carts. There is another temple on the right hand

side as one goes towards the town of Laalbarre, the district town. A naked holy man in chalk and with sacred red sign on his forehead looks out through matted hair and beard. Children struggle to and from school, stealing sugarcane from berating drivers of trucks and bullock carts. A mile or so down the road there is the intercollege, a private college, now owned by a group led by the factory owner. The quadrangle is still in the process of completion. The wing alongside the road houses the offices of the principal, the library with six bureaus all impressively padlocked, meeting rooms for teachers with simple chairs and long tables. Classrooms are found in the two other wings, though the porches do not yet have roofs and the floors of the classrooms are made of uneven brick. Crude desks and benches, complete with holes for inkwells, face a small table and chair. There is a simple blackboard in each room.

Beyond the school is the town of Laalbarre with shops, which are simply boxes on legs with open tin lids which can be padlocked while the owner is out. Inside the old town there are roads of brick, with uneven wear, and drains which flood the road at intersections where garbage prevents their free flow. Above these drains sit cloth merchants with rolls of cotton and silk, brass salesmen with samples of intricate Muslim brassware, and tobacco shops with Indian and European type cigarettes now manufactured in Bombay and Calcutta.

Northwestwards from the factory, on the road that leads in front of the factory gates, the road takes one to other villages, some smaller and one much larger than Raaipur, with seven tube wells and four tractors of three different makes, British, Russian and American. Here too, the sugarcane grows high and the wheat begins to lose its early spring green.

People of the Village

The people of this Northern village range from the tall fair Jats with aquiline features (the warrior caste) graded down into the darker and stockier lower castes such as the leather workers and the sweepers. Hindu men wear turbans and small white caps (like World War II G.I. caps) and closed topped jackets and diaper-like sheets draped about their legs, if they are in typical Indian style. Most of the factory executives and teachers in the inter-college wear Western suits, or at least trousers with the Indian closed-top jacket. Women in the village wear skirts, blouses and shawls which are draped about their heads and down over their feet though more often than not they show an area of midriff below their blouses. Muslim men wear loose pantaloons with light shirts which hang over their pantaloons. Apart from factory executives, teachers and the higher castes in the village, people are dressed in grimy clothing, and the teeming mass of humanity in dusty streets and village

lanes can be found performing their ablutions or urinating against walls and beside trees, indiscriminately.

Sociological Significance of Education in the Village

In his sociological study of the village of Raajpur,²⁸ Elder identified certain sociological values of education. For example, he found that a "high valuation of education separated the Mill elite from the general population and served as something of a badge to separate the two."²⁹ This serious view of education was not just taken for the older children, who were often sent away to boarding schools (or at least to Huseinpur, the nearest large town), but also for the smaller children, for whom tutors were hired, and frequently public "poojas" or religious observances were celebrated to thank God for success in examinations.³⁰ At the same time, Elder is careful to note that education, by itself, did not guarantee a different outlook on life, such as being vegetarian, or not eating eggs, since as he puts it:

'Education' by itself would not be enough to explain it, since a person who had received his education in a Sanskrit junior college would probably be even more 'personally conservative' than somebody with less education.³¹

²⁸Elder, Industrialism in Hindu Society: A Case Study in Social Change, op. cit.

²⁹Ibid., p. 182.

³⁰Ibid., p. 182.

³¹Ibid., p. 193.

Elder, however, goes on to press the point that this holds true even for Westernized education, such as "the advanced education offered in government colleges and universities in India" which exposed the student to the Western world, based as it is on premises that are different from the premises of Hindu society and possessing a status system markedly different from the caste status system.³² Elder considered it a tribute to the power of the norms of "Personal Orthodoxy" that despite the fact that so many of his sample of Managers had taken advanced education and had been exposed to the image of foreign superiority and non-vegetarianism, the majority of them still stated that they were vegetarians, though they may not necessarily have abstained or would abstain from all forms of meat.³³

Elder makes the point too, that the idea that some Westerners had, that education would make Hindus see the "illogicality" of reincarnation (the Hindu belief that the soul reappears after death in another and different bodily form) was as "logical" as assuming that education would make Christians see the illogicality of a life after death. What he is really driving at, in the opinion of the writer, is not the subject matter of Hindu or Christian ethics, but rather the power to change which is assumed to be inherent in education. After questioning the notion that education

³² Ibid., p. 193.

³³ Ibid., p. 194.

means the same thing for all men, insofar as Sanskrit education may be different from Westernized education, based on different premises and holding different status symbols, Elder attacks the notion that even scientific education, of and by itself, would necessarily change attitudes. He gives the example of:

Hindus (who) have seen in the "law" of physics asserting that matter can neither be created nor destroyed, a statement that Hinduism had taken as assumed (in their belief in reincarnation).³⁴

Recently, Elder has enlarged on concepts dealing with education as a changing force in India,³⁵ putting Hagen's propositions about traditionalism and economic development to the test in India. Incidentally, Hagen³⁶ tested his propositions with evidence from England, Japan, Colombia, Burma and the Sioux. He did not work with evidence from India. As he put it: "The situation in India has seemed to me too complex to lend itself to analysis in terms of the analytic model presented in this volume."³⁷

Elder makes the comment that "perhaps India's complexity and her current changes permit a closer analysis of the component elements of the traditional "image of the world"

³⁴Ibid., p. 207.

³⁵Joseph Elder, The Traditional "Image of the World" in India: An Analysis (Mineographed Paper, University of Wis., Department of Sociology, 1965).

³⁶Everett E. Hagen, On the Theory of Social Change (Homewood, Illinois: Dorsey Press, 1962).

that would be possible in some more homogeneous and traditional society."³⁸

He translates Hagen's series of statements regarding traditionalism in a society (a traditional society is one in which ways of behavior "continue with little change from generation to generation"),³⁹ into five categories; empirical fatalism, theological fatalism, political authoritarianism, personality authoritarianism and social fatalism. He then expresses these as questions and applies them to Indians in Northern and Southern India. He finds, for example, that as education increases, empirical fatalism decreases.⁴⁰ Elder defines empirical fatalism as "the belief that empirical phenomena occur for no knowable reason and they cannot be controlled."⁴¹ He considers education for sons under three headings: none, which includes 0 or 1 year of schooling; primary, which includes from 2 to 6 years of schooling; and higher, which includes from 7 to 9 years of schooling. He changes the cutting points for schooling for parents into none, primary, less than 5 years of schooling; and higher, more than 5 years of schooling. He arrives at the conclusion that as education increases, empirical

³⁸Elder, The Traditional "Image of the World" in India: An Analysis, *op. cit.*, p. 6.

³⁹Hagen, *op. cit.*, p. 55.

⁴⁰Ibid., p. 10.

⁴¹Ibid., p. 10.

fatalism decreases, with a significance of 0.001, and χ^2 of 218.7.

Elder interprets this strong relationship as the direct consequence of schooling in India today; he says:

Inasmuch as one of the main processes carried on in Indian schools today is describing and explaining empirical phenomena, it is not surprising that the more a group is exposed to such explanations, the less likely that group is to accept "fate" as a satisfactory explanation for why things happen.⁴²

It is illuminating, though, to give the results of his next question which showed that religious fatalism co-varies with empirical fatalism (significance of 0.001 and χ^2 of 16.9) with the most prevalence among Hindus, less among Muslims, and least among Christians and Sikhs.⁴³ He ascribes greater empirical fatalism among Hindus to the "subtle denigration of the physical world that leads more Hindus to conclude that "as it is written, so must it happen."

With special interest for our case study of Raajpur in Northern India is Elder's finding that theological fatalism (the belief that God or some moral order controls man's destiny) is more prevalent in North India than in South India. (significance of 0.001, χ^2 of 132.0.) He ascribes this to the nature of the Hindu gods, which is more classical in the

⁴²Ibid., p. 10.

⁴³Ibid., pp. 10-11.

North, with a greater sense of awe at God's power, with more of a sense of dominance of Brahmin priests over religious matters.⁴⁴

But this theological fatalism decreases as education increases among Hindus, with no noticeable effect on theological fatalism among Muslims (significance of 0.001, and χ^2 of 16.8 for Hindus, and no significant correlation for Muslims). Elder also mentions that it appears that minority-group status is a more important factor in shaping one's theological fatalism than is education, with the above effect among Muslims; but among the majority-group of Hindus in India, "education does appear to reduce somewhat one's acceptance of theological fatalism."⁴⁵

Defining personality authoritarianism as "personalities that view the world as a threatening and dangerous place, project guilt and hostility outward, and find gratification in dominance-submissive relationships."⁴⁶ Elder finds that authoritarian personalities are more prevalent among the uneducated than among the educated (significance of 0.001, χ^2 of 75.2). He backs up this conclusion with Lerner's statement that "literacy is the basic skill that underlies the whole modern sequence,"⁴⁷ and Lucian Pye's statement that,

⁴⁴Ibid., pp. 12-13.

⁴⁵Ibid., p. 16.

⁴⁶Ibid., p. 16.

⁴⁷Daniel Lerner, The Passing of Traditional Society (Glencoe, Illinois: Free Press, 1958), p. 64.

"...early schooling and first experience with the written word can...be a crucial factor shaping the outlook of people ..."⁴⁸ Elder further backs up this finding with clinical evidence provided by Adorno⁴⁹ showing a negative correlation between education and ethnocentrism, and with a positive correlation between ethnocentrism and authoritarianism. This would lead to the conclusion of a negative correlation between education and authoritarianism.

There is also a correlation between pro-dictatorship sentiments and no high school education among South Indian mothers⁵⁰ (at the 0.05 level of significance for South Indian mothers, with χ^2 of 4.37), with the further information that among North Indian mothers the high school educated show less preference for dictatorship. Elder speculates that fathers might not be so much affected because of their out-of-school exposure to political information.

Under the concept of social fatalism, which he defines as "a belief that one's general social position in life is fixed and one cannot or could not have done anything to

⁴⁸Lucian Pye, Communications and Political Development (Princeton: Princeton University Press, 1963), pp. 150-151.

⁴⁹Daniel J. Levinson, "Ethnocentrism in Relation to Intelligence and Education," in T. W. Adorno, et. al., The Authoritarian Personality (New York: Harper and Brothers, 1950), pp. 280-288, and R. Nevitt Sanford, et. al., "The Measurement of Implicit Antidemocratic Trends," Ibid., pp. 262-279.

⁵⁰Elder, Traditional Image of the World in India, op. cit., p. 29.

change it,"⁵¹ Elder tests four propositions: (1) the higher the father's occupation, the higher the son's aspirations (see Table 4-0). (2) High-caste and minority-group sons aspire to more education than low-caste sons. (3) Higher occupation fathers wish they could have studied farther than lower occupation fathers. (4) High-caste and minority-group fathers wish they could have studied farther than low-caste fathers.

TABLE 4 - 1

The Relationship Between Father's Occupation and Son's Aspirations*

Father's Occupation	Son's Aspirations	
	Beyond the high school level	Up to and below the high school level
White collar, professional and managerial worker	89%	11%
Sons of skilled workers and owners of business establishments	81%	19%
Sons of unskilled workers	58%	42%
$\chi^2 = 47.3$ $p = 0.001$		

*Source: Joseph Elder, The Traditional "Image of the World" in India: An Analysis (Mimeographed Paper, University of Wisconsin, Department of Sociology, 1965).

⁵¹Ibid., p. 30.

For (2) at the significance level of 0.001 and χ^2 at 82.1, Elder found that the higher the family's caste, the higher the son's educational aspirations, with Muslims, Christians and Sikhs having almost as high aspirations for education as the highest-caste Hindus.

For (3) and (4), at the significant level of 0.001, and χ^2 of 75.4 and 118.2 respectively, Elder found that "the same two factors that influence the sons' mobility aspirations, i.e. occupational position and caste or religious status, also seem to have the greatest influence on the retroactive mobility aspirations of the fathers." Elder makes the point that it is precisely those who "have" who appear to be the most eager to "continue having." He speaks of Christians, Sikhs and Muslims "as marginal, but denying the legitimacy of their marginality,"⁵² who appear as keen to "have" or to "have more." The middle levels of occupation, as well as the middle castes, rate between the lower levels of occupation and of caste in their aspirations; for example, while only 9 per cent of the unskilled would have liked to have studied at the graduate level ("post college level"), 22 per cent of the skilled and owners of businesses would have liked to have studied at that level, while 37 per cent of the white collar, professional and managerial workers would have liked to have studied at the "post college" level.

⁵²Ibid., p. 32.

In his conclusions, Elder has an important place for education. He sums up:

The variable most affecting change from "traditional" to "non-traditional" images of the world is education. Increasing education co-varies with decreasing empirical fatalism, decreasing theological fatalism (among the members of the majority religious group), and decreasing personality authoritarianism. Likewise, to the extent that education corresponds with higher occupational status, increasing education co-varies with decreasing social fatalism. Even though the various parts of Hagen's traditional "image of the world" may not influence each other, many of them are markedly influenced by the same common variable - education.

(Another) major finding is that the two areas in which the effects of education seem least certain and most dependent on other variables are the areas of theological fatalism and political authoritarianism. As far as political authoritarianism is concerned, education appears to make little difference in whether the respondents are pro-dictatorship or pro-democracy. In the total sample there are roughly equal percentages of educated pro-dictators and uneducated pro-dictators. It is only after a highly politicized milieu has come into existence (as is the case in south India) that any noticeable correlations appear between greater education and less political authoritarianism. At the same time other variables such as theological fatalism and personality authoritarianism also begin to correlate with political authoritarianism.

As far as theological fatalism is concerned, education appears to influence only to a small extent the theological fatalism of the majority religious group. Minority religious groups - regardless of amount of education - appear to retain a constant level of theological fatalism - with an equal proportion of educated and uneducated subscribing to the view that the outcome of actions are in God's hands.

The relative invulnerability of political authoritarianism to education might serve as a warning to any who may feel that education automatically establishes a basis for a democratic form of government. Obviously there are specific attitudes that need be generated for such a basis to be established. Literacy as such is not enough.

The relative invulnerability of theological fatalism to education might provide reassurance to those who fear that a people or nation lose its identity when they introduce mass literacy campaigns. The evidence presented here suggests that even fairly drastic changes in attitudes regarding, for example, physical causality, do not necessarily change a person's theology or his belief that ultimately the outcome of his actions are in God's hands.⁵³

Attitudes Toward Education

Expressed by Seeta Ram Mill Officials

Elder makes the point that the building of the school by the owners of the factory was a part of the "jajmanee" (traditional exchange of services and grain between village families) relationships.⁵⁴ They were a separate group from the village, and had their own attitudes. Elder brings out the salient point that this did not necessarily make them more Westernized in every sense of the term. They saw great value in giving money for religious services and might even have been said to have set a good example in this matter.⁵⁵ But the fact that they lived apart from their larger families, and were separated from the traditional sites of their homes, gave them some common problems with Western society, for example, more problems regarding their teenage children in the manner of American homes.⁵⁶

⁵³Ibid., pp. 33-35.

⁵⁴Elder, Industrialism in Hindu Society, op. cit., pp. 125 et. seq.

⁵⁵Ibid., p. 145.

⁵⁶Ibid., p. 236 et. seq.

Questionnaire Responses by Mill Officials

The new part-owner of the factory saw no connection between education given in the primary school and the efficiency of his workers. He said he paid his workers a half-dollar a day, and they were not worth it. If he got six hours a day of work out of them he was lucky, he said. As to schooling making them better citizens, he could not make sense out of that. More schooling? Change of schooling? These things did not make sense for him in the world as he saw it. What India needed was more machinery, more opportunities to sell its products, and more efficiency among its workers, without wage increases. He had bought into the sugar factory to make money. He had also recently bought into a fancy tailoring company which had branches in Delhi and Bombay.

When we spoke about the inter-college, he told me he was chairman of the committee that handled the affairs of the college. He said he had hired a new principal for Rs. 350 a month; there had been trouble between the old principal and just about everyone. He told me he paid his Chief Chemist Rs. 2,500 per month and provided him with a rent free home, including two servants. He himself owned a 1958 Chevrolet Bel Air for which he had just paid Rs. 50,000 (roughly \$10,000) and was shocked to hear that it would sell for only \$500 at present (1965) in the United States. "In America even sweepers (mehtars, the lowest caste, or rather outcaste) own cars," he told his wife.

The Chief Chemist of the mill was a high-caste Punjabi Hindu, who had just spent some time as the Manager of the mill. His openness and kindness can only be explained by his high regard for Joseph Elder, who sent him a copy of an article he (Elder) had just published on the history of the Raajpur area. He asked for a typed form of the questionnaire (Appendix C) and arranged an interview for the next day. Another engineer was present, as was the Excise Inspector, who also lived in factory housing. He then presented a typed answer, which is reproduced below.

8.3.1965

Sub: An attempt to estimate the effects of education in the Mill.

With reference to your proforma on the above subject, I am sorry to say that the nature of the questions formed therein are not quite clear to me. You seem to be under the impression that we probably impart education or some sort of schooling to the Mill Staff, workers as well as Supervisors. To make the position clear I must state that there is no such arrangement not only in this factory but to be more correct in other factories too. U.P. Government has however a technical Institute known as National Sugar Institute, Kanpur where all kinds of technical education pertaining to the Industrial production and the Engineering of the sugarmill Machinery is imparted. They have courses for advanced study where only B. Scs. are admitted and along with that they have short courses where people after passing high school exams, are taken and given section-wise training. They also deal in courses of most of the allied Industries connected with its by-products.

. . .

If by literate is meant the working knowledge of national language, i.e., Hindi, then 60% of the workers are literate and the remaining 40% doing mostly unskilled jobs are illiterate.

The number of B.A. and B.Sc. was only three when the factory was started but the number has since then risen to seven at present.

Chief Chemist.

The Chief Chemist thought that general education did not seem to have any connection whatsoever with productivity. When I explored this relationship further, he provided additional information on the Mill, which is reproduced in Table 4-2.

TABLE 4 - 2

Investment, Production and Labor Force
Information on the Seeta Ram Mill, 1940-65

Date	Education of Employees	Crushing Capacity	Employment	Capital Investment (in 1940 price)
1940	3 graduates 15% Hindi literate	1,000 ton	1,100	Rs. 2,500,000
1943-44		1,250 ton	1,300	
1948	(the year that hours per week were lessened from 56 hours per week to 48 hours per week.		1,400	
1956		1,500 ton	1,450	Rs. 5,000,000
1965	7 graduates 40% Hindi literate (50% Hindi literate for below 20 in age.)	1,650 ton	1,500	Rs. 5,500,000 (x 5 for present value)

Source: Chief Chemist, Seeta-Ram Sugar Factory

Another mill official who had views on education in the primary school was the medical officer. He felt that the teachers there were recalcitrant, and were shirking their responsibilities. Asked about the question of health, he thought that there was no proper training in hygiene, though he seemed to query whether any effective knowledge coming from education would make a change in national productivity or have any influence on public affairs.

Attitudes Toward Education

Expressed by School Officials and Teachers

Primary School

The four teachers at the primary school (including the principal) came from higher castes, were farmers, had a year of training beyond the matriculation, and received Rs. 59 per mont, as compared with Rs. 90 per month as the minimum wage paid in the sugar factory. They looked on their jobs with religious zeal, and religious signs were plentiful on walls and doors, e.g., "Truth is God." Their religious zeal was demonstrated on countless occasions, the most vivid of which was when the whole school (300 minus the large number frequently absent) was punished for laughing during a hymn when the word God (Bhagwan) was mentioned. (All boys had to bend down and hold on to their ears, with their hands between their ankles, and all girls were switched on the hands.) Most of the pupils were grimy little children

representing the various castes in the village (excluding the sweepers, of which there was not even a one in the school).

Working conditions were difficult; for example, the fourth grade had as many as 70 children in a room not more than 20 feet by 20 feet in size, all seated on mats, and more often than not sharing books and trying to pay attention to the story of Cinderella, while across the partition-wall the fifth graders were chanting their mathematics tables, and outside the first graders were scribbling on slates and coming in every now and then to complain about each other since their teacher had taken off for the day.

Of course, the pay of these primary teachers seemed to include the freedom to take days off whenever they wished. The headmaster took off for ten days; the fourth grade teacher went off in the middle of the morning to take care of his fields and left his class on their own.

When asked the questions listed in Appendix C, the primary school teachers cited better wages as the number one change necessary to improve conditions. They also cited the need for improvement of the school buildings and classrooms (they themselves would never think of cleaning things, so the primary school looked run down and dirty). These teachers also wished for better conditions for their pupils, who could not afford books and soon made those they had grimy. Of course, cleanliness has an element of the relative about

it, and these pupils and teachers were accustomed to the Indian notion of cleanliness, living in villages which were without proper sewage and without facilities for keeping things clean. To the question, "Does teaching make better workers at Mill?" the primary school teachers failed to see any real connection between what these youngsters learned and the handling of machines.

Pupils were often asked to sit down and listen, and not take their turn at reading because their voices could not be heard above the din. To give some notion of the lack of basic physical facilities needed to effectively conduct school, two women teachers from the next and wealthier village, which had opted for segregation of sexes from the earliest elementary grades, said their first need for their students was drinking water in hot weather. (Here the summer temperature soars into the 100's.)

When asked about their students, they felt that the higher castes were naturally brighter: the fourth grade teacher showed me a little boy no older than 8 in the fourth grade among children 3, 4 and 5 years older than himself. The teacher felt that this made his teaching difficult as the boy was simply too young. He said the fact that the boy could read and write and do all the intellectual work for the grade was not sufficient. When questioned about his power to hold the child back, he just did not think this was possible. In the turmoil of having 300 children in facilities meant

for 100 (and in Indian rural conditions, these facilities are meager at best) this particular problem seemed too insignificant to dwell on.

Secondary School

At the time of the interviews, the Laalbarre Inter-College Teachers were caught up in the State Teachers' plans to strike during the matriculation and the intermediate examinations (the largest number to take the same examinations in the world)⁵⁷ to air their grievances and force the government to grant them the Rs. 50 a month "dearness allowance" D.A. (cost of living allowance) which government school teachers with like credentials received. The Central Government began to view the situation with increasing attention. As one national paper put it:

U.P. teachers, who are continuing their boycott of work connected with the high school and intermediate examinations, have welcomed the Union Education Minister's statement in Parliament that he is willing to give additional assistance to the State Government to enable it to increase the salaries of school teachers. The State Government has been pleading its inability to accept the teachers' demand for an improvement in their emoluments, and as interim relief the increase of dearness allowance to Rs. 50 for all teachers because of lack of funds. Any increase in the teachers' emoluments beyond the small increase in the D.A. announced in the State Budget, the U.P. Education Minister said, could be possible only if the Centre put more money at his disposal. The view generally held by U.P. teachers that the Central Government had offered to shoulder half the additional burden if the D.A. was raised to Rs. 50 was described by Government spokesmen as erroneous, for the Centre was committed to giving no more than 50 per cent of the cost of educational programmes set out in the Third Five Year Plan.

⁵⁷Mukherji, Educational Administration in India, op. cit., p. 524.

The teacher's agitation, which is backed also by university teachers, seems to have made the Union Education Minister realise the need for concrete steps to ameliorate their lot. His decision to treat U.P. as a "special case" is a response in fact to the State Education Minister's plea for increased assistance. The decision is justified on the ground that teachers in U.P. are comparatively low-paid. As for primary teachers in that State, they are, as Mr. Chagla admitted in the Lok Sabha, the lowest paid in the country. Mr. Chagla did not disclose the amount of additional assistance he was willing to advance, but his statement has come as a ray of hope in the encircling gloom.

But any decision in pursuance of the offer is conditional on the teachers withdrawing their agitation. The situation created by the agitation is already being exploited by some Opposition parties for their own ends, and if the teachers proceed to implement their programme of hunger-strikes in Lucknow, the result will be that the atmosphere will be further embittered. In such circumstances the chances of a settlement may recede. The State Education Minister can perhaps help matters by assuring sympathetic consideration of the teachers' demands now that the Centre is willing to help the State to get over the crisis. Mr. Chagla has guarded himself against other States criticising the special consideration shown to U.P. by promising to change the system of matching grants in the Fourth Plan because of the limited resources available with the States.⁵⁸

The area was wracked by rumors of strikes and government suppression plans. Statements as to the inability of the Central Government to find funds to ease the situation did not help matters. For example:

It is unlikely that the Planning Commission's proposal for setting up a committee or commission to determine maximum and minimum pay scales for teachers will raise the spirits of that much harassed community. There has never been any lack of sympathy for the lot of teachers nor any lack of plans for their uplift. But concrete results have been singularly unspectacular.

⁵⁸Statesman (New Delhi), March 5, 1965.

What is worse is that expectations of substantial results would in existing circumstances be plainly unrealistic. When Mr. T. T. Krishnamachari expressed his inability in Parliament the other day to find more money for teachers he was not being indifferent to the teachers' needs but was only emphasizing the difficulty of meeting those needs. At the beginning of the second Plan, the minimum basic salary suggested for an untrained primary school teacher was Rs. 40 and for a trained primary teacher Rs. 50. Progress towards reaching these salary levels has been made in all States and in some the targets are said to have been exceeded. According to an estimate, at the end of the third Plan, there would be only one State where the minimum emoluments of a teacher would be less than Rs. 55. In four States, the salary range would be between Rs. 56 and Rs. 65; in five, between Rs. 66 and Rs. 75, and in five others, over Rs. 75. Additional benefits such as the Madras Government has provided through a pension-cum-provident fund-cum-insurance scheme may augment a teacher's real wages; but even so, his income will compare unfavourably with that of a semi-skilled worker in a large industrial undertaking. It will be futile to expect any improvement in the quality of teaching or in the attitude of the teacher to his vocation if conditions of service remain as they are. An attempt at indirect amelioration has been made in some States by bringing the village school teachers within the framework of the community development schemes. But this has only led to complaints like those heard in Rajasthan lately that the sarpanch in a development block is too often inclined to treat the village teacher as his man-of-all-work. In what other ways the teacher can be given some immediate relief is not an easy question. About 50 per cent of the total third Plan provision for education is earmarked for primary education. With another 21 per cent or so for secondary education, the balance is hardly sufficient for financing all the various schemes which are under way for promoting higher scientific and university education. Any substantial upward revision of the pay scales of lower school teachers may well swallow up the entire Plan allocation for education of Rs. 420 crores or so. There are about a million and a quarter teachers in the country's primary schools and about 360,000 in its middle schools. These numbers will increase with every effort to carry out the constitutional provision for free and compulsory education up to the age of 14.

Either we have to insist on minimum standards (including standards of pay for teachers) or we have to pursue the quantitative targets implied in the constitutional directive at the sacrifice of quality. We cannot have both.⁵⁹

This Intercollege had pupils in grades 6 through 12. At grade 10 they took the matriculation examinations, which signalled the end of high school, and at grade 12 they took their Intermediate examinations, which completed two years toward the Bachelor degree. The teachers were therefore qualified at different levels, from simple matriculation with teacher training through professors with Masters' degrees. Their salaries ranged from Rs. 75 to Rs. 250, exclusive of dearness allowances.

Another important feature of the salaries of teachers in this school was the money they made from tutoring. The Vice-Principal prepared a summary of possible earnings from tutoring per month, ranging from four to possibly all twelve months of the year. From grade six through grade eight, the average expenditure per pupil for tutoring was Rs. 15 monthly. Some might pay as low as Rs. 10 per month and some as high as Rs. 50 per month, throughout the year. The Vice-Principal told me he was fortunate in having a double M.A. in English and Mathematics, so he earned Rs. 100 per month from tutoring the Chief Chemist's son throughout the year. Most other students would be tutored in small groups and pay Rs. 15; some would meet in large groups and pay only Rs. 10; this depended on their financial situation. It was generally felt that without this tutoring there was little chance of success in examinations.

⁵⁹The Hindustan Times, New Delhi, March 4, 1965.

From 9th grade through 11th grade, the average fee for tutoring was Rs. 25, with the lowest fee at Rs. 20 and the highest again near Rs. 50 per month. From 1st year intermediate and on, the average tutoring fee was Rs. 35 per month, with the lowest around Rs. 30 and the highest around Rs. 60 per month.

Of course, in this atmosphere of tension, when the teachers at the Intercollege found themselves a part of a State movement that was making National headlines, it is not surprising that the one serious consideration elicited by the questionnaire (Appendix B) was that of low salaries. Teachers made invidious comments on the salaries of the Mill officials, their housing, and their status.

As a group, when once they had finished discussing the strike requirements, other views about the future of education in India began to assert themselves. An English professor quoted Shakespeare to the effect that students in the area were rough diamonds - that they were unsophisticated compared to students in the cities and that they stared at foreigners with frogs' eyes, but they contained diamonds in their heads (from Shakespeare). Still (and the other teachers concurred), they were good students even though they did not really need education for financial reasons; they owned farms and only sought prestige. In the view of these teachers, the best students, of course, were of the highest castes,

though of late the Jats, the warrior caste, were not taking to education and not working as hard at it as some of the lower castes (these did not extend as low as the outcastes, such as the leather workers, sweepers, etc., but to such groups as the business castes). The Hindi teacher thought that more should be done for the warrior castes, such as the Jats, as they would be depended on to defend the country. He felt that members of lower castes would gain degrees and then take clerical positions, and thus begin to gain control of the government, while the warrior castes would be left ignorant and without power and influence, to the detriment of the country. Some of the other professors and teachers were shocked at such strong views, expressed in front of an outsider, and tried to quiet down such talk as being against government policy.

There was talk about introducing a lunch program to benefit students who ate poorly at home. Apparently this had been tried only to fail, because students would not eat such commonplace foods as wheat bread and lentils, which they felt they could get at home, and demanded foods they could not get at home - such as fancy sweets from the cities.⁶⁰

⁶⁰Professor Joseph Elder considers this as an indication of good living conditions in this area. He cites the example of lunch programs being a huge success in the South of India. He also mentioned that there was greater participation by the scheduled (Outcaste) caste in education in the South, which might explain the success of the lunch program.

Teachers felt that country living, with most of the students from the higher castes and the more prosperous homes, gave their students a healthy way of life. Their other main interest was in visiting the United States. Later the Physics teacher (M. Sc. in physics) mentioned that he had been in touch with a friend who was working on his Ph.D. at Howard University. When it was mentioned that this was predominantly a Negro university, the young man said he was definitely not interested in attending a Negro university. Since the Indian government has begun cutting down on the number of fields in which it allows its students to take rupees out of the country for training, this teacher had chosen the field of mechanical engineering, in which students could still travel to the United States. His salary was about Rs. 250 a month, and since he was a newcomer, his earnings from tutoring were still low, about Rs. 100 a month and only for the last three or four months of the school year.

Questionnaire Responses of School Pupils

With the assistance of Professor Joseph Elder, a questionnaire was developed to incorporate features which would delve into the financial situation of children and their parents who were being educated in Raajpur and environs. The questionnaire is reproduced in Appendix C and tables summarizing responses will be found in Appendices D, E,

F and G. The flavor of Elder's work on the village was incorporated into the questionnaire with purposeful questions relating to caste and land ownership and to the reasons for children not going to school. The notion of foregone income was conveyed in various forms, with emphasis on what the students themselves thought they would earn if they left school. The theory here is taken from Schultz's use of figures from Venezuela which indicate that foregone income starts very early in underdeveloped countries. The Indian context was maintained by employing a combination of caste and financial considerations.

The Importance of Caste

Since caste assumes such a dominant role in a traditional society such as is found in this agricultural community, Appendices D-1 through D-9 consider caste with regard to nine topics. Separate responses are reported for males and females, since inspection of the answers showed clear dichotomies between responses emanating from males and females.

Caste distribution was broken into six categories: Brahmin, the priest caste; Other Twice Born, which included Kshtriya (the warrior caste), and a host of other high castes including Vaishya (the business caste, third in line in the Hindu hierarchy), and local variations such as Arora, Thakur, Khalli, Khatri, Chopra, Kasyap, Rastogi, Saxsena, and Mehta. The distinction between these two castes has

as its rationale the important rivalry between the traditional leaders of Hinduism in the form of the Brahmins and the newer emerging leaders in industry, business and government service.

Jats were separated from other groups because of their number and influence in the village of Raajpur, as shown in Elder's work in the village. Other Hindus include the service castes, the Shudras made up of vegetable growers (Bhagbaans) and smaller businessmen (Agarwals). Non-Hindus include Muslims, Sikhs and Christians. The Scheduled castes include the so-called Harijabs, the untouchables. They still are in a relatively unfavorable position compared to that of other states and have very few members in school.⁶¹ These which are in school do not come from the lower groups within the scheduled castes such as the leather workers (chamars) and the sweepers (Bhangis).

Modus Operandi

The questionnaire was adapted to the children themselves as it was found that children in many cases knew as much if not more than their parents and were much less suspicious. School officials were most cooperative. At the primary school the acting principal asked the questions with great gusto. He wrote them out on a blackboard and

⁶¹ Ministry of Education, Review of Education in India, 1947-61 (Delhi: Government of India Press, 1961), p. 619.

had the children write out the questions and then answer them. In the Inter-College, the vice-principal accompanied me to the various grades and asked the questions himself, which permitted me to observe the little nuances involved in the pupils' answers. At the same time the pupils were not placed in extraordinary circumstances. They saw the whole operation within the framework of their normal pattern of authority.

Caste Distribution and Numbers of Students

(See Appendix, Tables D-1, E-1, F-1, and G-1)

There is a gradual drop-out from school of Scheduled castes and Other Hindus, although the picture is somewhat skewed in our samples. The advanced 9th grade class was composed predominantly of girls and the science intermediate class had only boys, since science apparently is not thought to be a feminine pursuit. The special features are the strong ranking of the Other Twice Born castes and the strong representation of Non-Hindus in science intermediate.

Caste Distribution and Age of Students

(See Appendix, Tables D-2, E-2, F-2, and G-2)

The average age for grade 5 was between 11 and 12, with the mode at the age of 12. For grade 6, the average age was between 10 and 11, with the mode at the age of 10. The average age for grade 9 was 13, as was the mode. The

average and mode for grade 11 was age 18.

For grade 5, a majority of the Brahmins were 12, a majority of the Other Twice Born were under 11 (including three girls who were 10), a majority of the Jats were 12 and older, a majority of the Non-Hindus were 12 and older, and three out of four of the Scheduled castes were 12 years of age. There were no girls of the Scheduled castes at this level of education, tying in with Elder's observations about the Scheduled castes in the village of Raajpur.

For grade 6, all the children below the modal age of 10 were either Brahmin or Other Twice Born. The one Non-Hindu (a Muslim girl) was 10, average for the class, while the one Scheduled (a boy of the gardener caste) was 14.

For grade 9, again, the four children below the average age were Brahmin and Other Twice Born, and while the only Non-Hindu (a Muslim girl) was of average age for the class, the one Scheduled caste member, a boy of the gardener caste, was 15 years of age. He shared this age bracket with members of the other castes, excepting Brahmin and Non-Hindu.

For grade 11, the below average age group was made up of two Brahmins, two Other Twice Born, and a Jat, together with a Muslim boy, who was only 15, while the others were 16 and 17 years of age. The oldest "boy" in the class was a young man of 23 and a Brahmin. Of the six Non-Hindus, five were Muslim, and one, Sikh. The age range was from 15 to 21; the Sikh was 19 years old.

Caste Distribution and Fees

(See Appendix, Tables D-3, E-3, F-3, and G-3)

While 5th grade pupils in the primary basic school paid a flat rate of 6 np. (Rupee 0.06) a month, a token fee, and the 6th grade pupils at the inter-college paid a flat fee of 94 np. (15 annas in the old currency), the 9th grade and the 11th grade showed different charges for fees. Brighter pupils, pupils from certain castes, pupils with brothers and sisters in school and girls could claim reductions in their fee charges, while science students had to pay extra fees for laboratory charges. The median fee for boys and girls in the 9th grade was between Rs. 1 to 2, with none of the girls paying more than this, while some boys claimed they paid as high as Rs. 5 or 6. No girls of Other Hindus and Non-Hindus paid more than Rupee 1. Thirteen of the 17 boys in the 11th grade paid between Rs. 4 and Rs. 14, with three boys paying Rs. 11.24 and five boys paying Rs. 6.24. Two boys, the Brahmin of 23 and a Muslim, claimed they paid Rs. 15 a month.

Caste and Costs Other Than Fees

(See Appendix, Tables D-4, E-4, F-4, and G-4)

The average fee for the 5th grade was between Rs. 2 and Rs. 3. If it is considered that much of the village has not yet fully shifted to a monetized economy and still functions in the feudal (jajmani) system of barter for

services, the service castes (Shudras, here the Other Hindus) and the lower castes (Scheduled) who are not employed in the factory would most probably be unable to afford to send their children to school, though it must be remembered that here the family base for support is wider since it encompasses the joint family of cousins.

In the 6th grade the average of expenses other than fees lies between Rs. 1 and 3. Brahmins have two children with expenses up to between Rs. 5 and 6, with one girl spending as much as Rs. 8.

More than half of the 9th grade chose not to answer the question. Of those who answered, only the Brahmins and Other Twice Born spent more than Rs. 3 a month. One Twice Born girl claimed she spent more than Rs. 15.

The average expenditure for the 11th grade was between Rs. 3 and 5. A Brahmin boy of 18 claimed he spent Rs. 10 for expenses other than fees. Tutoring costs are not included in these figures. This subject was brought up later in private conversation, and since the topic was not considered an open question, though it was generally widespread, information had to be gathered from different individual cases and compared. The State has some provisions regarding this problem; there have been laws claiming that tutoring income should be declared, that they should not exceed the teacher's official salary, etc. The whole activity is officially frowned upon.

Caste and Educational Aspirations, With and Without Aid

(See Appendix, Tables D-5, D-9; E-5, E-9; F-5, F-9; G-5 and G-9)

The median for educational aspirations for boys and girls in the 5th grade lies between 9th and 12th grade. No girl aspired to above 12th grade, while no Brahmin and Other Twice Born aspired to an education above the Bachelor degree. Jats, Other Hindus and Non-Hindus opted for above the Bachelor level. Only one Jat girl was satisfied with completion of grade 5, making this her last year in school. Her age was 11, average for the grade in the primary basic school considered here. When it is considered that the median level of education of the parents of these children was 0 (Appendix D-8), some perspective on the height of these aspirations is gained.

With aid, the picture changes; now 23 of these 36 children (about 60 per cent) indicated they would continue their education to beyond the Bachelor level, including four girls. No girl would settle for less than an 8th grade education and Other Hindus and the four Scheduled caste boys are included in the "above 14" grade category.

The change is not so dramatic for the 6th grade, though here again the level of expectations for education shifts upward from 11th-12th grade to 13th-14th grade, if aid for further education were made available. Eight out of 10 pupils still chose to terminate their education at the high school level (10th grade), with no members of the castes

lower than Brahmin and Jat willing to remain in that category when aid was provided. The one Jat boy who did not know how far he would continue his education without aid chose to go beyond the Bachelor level if aid were provided. The Non-Hindu girl (a Muslim) who had chosen to go through the Bachelor level now did not know how far she would go if aid were provided.

The median level of education aspired to by the ninth grade was in the 11th-12th grade category; when aid was provided, the median did not change, because five Other Twice Born now indicated they did not know how far they would continue their education, and four of the same group elected to go on for "over 14," as compared to two who indicated this goal when aid was not provided. It might be recalled that this is a predominantly female class.

None of the 11th grade pupils had aspired to less than the Bachelor level, and 11 of the 17 (over 60 per cent) had chosen to go beyond this level to the Master's and Engineering Degrees (B. E. five years beyond the Intermediate). With aid provided, 14 elected to go beyond the Bachelor's level, including foreign study (three) and the Ph.D. (one). Two Brahmin boys stated that they had "no need" for aid, with their ambitions set at the Bachelor's and Master's levels respectively.

Caste and Education of Father and Mother

(See Appendix, Tables D-8, E-8, F-8 and G-8)

The mode for the education of fathers and mothers of pupils in the primary school was 0, with 44 parents (including 17 fathers) in that category. At the same time, three Brahmins and one Other Twice Born claimed their fathers were educated beyond the Intermediate level, with two beyond the Bachelor level. One Bhagbaan (Other Hindu) from Raajpur claimed his father had gone through high school. Only two Jats claimed their fathers went through 5th grade, while the rest professed that none of their parents had gone to school at all.

For the 6th grade, the average education for fathers and mothers was between 6th and 8th grade, with two Brahmin and four Other Twice Born fathers in the "over 14" bracket. Three Other Twice Born mothers were in the 13-14 bracket, while the highest educated Jat had gone through high school. A Non-Hindu (one Muslim) stated that her parents had no schooling at all, while the one Scheduled caste (a gardener) claimed the 5th grade for his father and no education for his mother.

The average level of education for parents of the 9th grade pupils was between 6th and 8th grades, with a wide range within the Other Twice Born caste, where two fathers went over 14th grade level, while six parents (two fathers and four mothers) had not gone to school. Again,

the Scheduled caste member is a gardener. Both parents in this case went to school, the father through 7th grade and the mother through 2nd grade.

The median level of education for the Science Intermediate grade was between 6th and 8th grades with the Brahmin and Non-Hindu (Muslim) fathers beyond the 11th grade level, and no parent beyond 14th grade. Five mothers of the Jat and higher castes, and four mothers of the Non-Hindus had no schooling, while two Other Twice Born fathers did not go to school at all.

Educational Aspirations and Landownership

(See Appendix, Tables D-10, E-10, F-10 and G-10)

It must be borne in mind that the meaning of "landless" in the category of owning "0" land is not indicative, by itself, of the wealth of a family; neither does the ownership of land signify anything other than the farming of land, including small vegetable farming (truck farming). For example, members of the factory staff would have been considered as owning "0" land though their incomes would have placed them among the wealthiest in the area; likewise, they would not have counted the small backyards most families owned as "land." The Hindi word here is *k h e t i*, which means precisely farming land.

At the 5th grade level the teacher felt that the pupils might not know the exact number of the bighas (six

bighas = one acre) of land their family owned. The question used with this group merely attempted to get at whether the children came from a family which was in business or in the "service," i.e., employed at a salary - this would include the factory officials, railway officials, government service in the form of the post office of all ranks, down to the lowliest "chaprassi" (messenger boy) in his uniform. Children of farmers aspired to at least as high a level of education as did any of the other categories, while children from families in business did not consider going beyond 12th grade. Children of families in the "service" comprised the largest numbers of both boys and girls whose ambitions lay at the high school level, though the highest percentage of farmers' children opted for "over 14" (about 30 per cent of the group as compared to 5 per cent of the children whose fathers were in service, and none of the business group).

At 6th, 9th and 11th grade levels, the breakdown into the exact number of bighas owned by the parents and the aspirations of the children is more precise. At the 6th grade level, one of the large landowners' children aspired to "over 14," while a child whose parents were landless aspired to this same high level of education. The lower end of the scale of landownership corresponded closely with aspiration for the lower levels of education.

For 9th grade (predominantly girls), somewhat the same picture was found but without the extremes. Here too,

the children of the larger landowners aspired to a high level of education, while children of small landowners aspired to lower levels than did the children of the landless. The median for daughters of landless parents was slightly higher (grade 11+) while the median for girls of parents who owned less than 9 bighas, aspired to a little less than a high school education (grade 9+). Leaving out these small landowners' children, the median education aspired to is as high for the children of landowners with more than 9 bighas of land as for the children of the landless.

Among the pupils at the intermediate science level, nine were children of landless parents as compared with eight who were children of landowners. Proportionately, slightly more of the landless aspired to "over 14" education, though the son of a large landowner (300 bighas) and the son of a Brahmin (Tiagi) aspired to an engineering college (B. E.) degree. Apparently the children of large landowners seek higher education as ardently as do the children of landless parents.

Caste and Estimated Future Income

(See Appendix, Tables D-6, E-6, F-6, and G-6)

The Other Twice Born castes led in their expectations of future income, with very close parallels between the four levels. For 5th grade, a Brahmin male hoped to make Rs. 600 a month with a Master's degree; for 6th grade, a

Brahmin male hoped to make Rs. 500 a month with an Intermediate degree; in 9th grade, an Other Twice Born (a Khatri) female hoped to make Rs. 500 a month with a Master's degree while a Brahmin female came close to this expectation with Rs. 400 with a Bachelor's degree; for 11th grade, a Brahmin male hoped to make Rs. 500 with a M.S. degree, and a Non-Hindu (Muslim) expected to make Rs. 700 a month with a B. E. degree.

At the other end of the scale, in 5th grade, one female Jat stated that she would earn only Rs. 20 while another female, an Other Twice Born (vaishya), expected to earn Rs. 400. She was followed by two more Other Twice Born females who expected to earn between Rs. 200-299. The highest income expected by a female in 6th grade was Rs. 200. This girl belonged to the Brahmin caste. There were nine girls who estimated their future income at zero, although they ranged from grade 10 through "over 14" in their educational aspirations. The trend is even more accented in 9th grade, where eleven girls did not expect to earn anything (2 Brahmin, eight Other Twice Born and one Jat), while their educational aspirations ranged from 10th grade to "over 14," with four girls declaring their ambition to be educated up to the Bachelor level.

The 11th grade pupils estimated their chances as earners to range down to Rs. 100 a month for a Brahmin in service, with the lowest Jat estimating his earnings to be

Rs. 200. Two Non-Hindus expected to earn Rs. 200 and Rs. 250 each in service.

Educational Aspirations and Estimated Future Income

(See Appendix, Tables D-11, E-11, F-11 and G-11)

In general, the pattern of entries in the tables relating educational aspirations to future income slant downward to the right, indicating higher anticipated incomes are associated with higher education. This is clearly demonstrated in 5th grade figures where "over 14" earns Rs. 600 a month and a fifth grade female graduate earns Rs. 20. The trend shows females earning less than males, or earning nothing as housewives.

Caste and Foregone Income

(See Appendix, Tables D-7, E-7, F-7 and G-7)

In addition to being at much lower figures than the estimated future income tables, the entries in the tables on foregone income tend to assume a rectangular distribution, suggesting that caste has less influence on foregone earnings. While the higher castes indicated a much lower foregone income, with many recording "zeros," "don't knows," and "no answers," the foregone earnings estimated by the top earners are substantial. For example, for 5th grade the modal foregone income of those who placed values on their earning potential was between Rs. 50 and Rs. 74. For

6th grade, the value for foregone income was bimodal at Rs. 1-24 and Rs. 50-74, with eight entries each and there were seven who recorded zero. The modal income for those who declared values for 9th grade was between Rs. 50 and 74. The modal value for 11th grade was between Rs. 25 and 49.

Educational Aspirations and Difference in Salary from Those Who Leave School Now

(See Appendix, Tables D-12, E-12, F-12 and G-12)

Up through 8th grade, 5th graders estimated that there was no difference between what their incomes would be when they leave school and the incomes of those who left at 5th grade level. There was a small difference in the opinion of one (an Other Twice Born) who put the difference at Rs. 10 or 12, but seven others registered no difference. Even at the 10-12 grade level, seven registered "0", while a member of the Scheduled caste registered Rs. 40. Even the "over 14" group registered no difference in income.

Sixth graders estimated that through grade 10, the difference in earnings was between Rs. 50-99; through grade 12, the modal difference was the same (with one extreme of Rs. 500 by a member of an Other Hindu caste). Through grade 14, the mode lies between Rs. 1 and 49; the "over 14" group would estimate the difference between their salary and that of people who left at this level (6th grade) to lie between

Rs. 150-250.

Ninth graders estimated that through 10th grade, the modal difference in salary would be between Rs. 50 and 99; through 12th grade, the modal difference in salary would be 0, and the mode for graduates through the Bachelor degree would be 0. After the Bachelor level, the difference between graduates and those who left after 9th grade was estimated at as little as Rs. 50-99 and as much as Rs. 350-399.

The clue to the skewing in the analysis of the reactions of 9th grade to this question lies in the fact that the majority of the pupils in the class were girls of upper castes and have undoubtedly estimated 0 income as their future income as married women. Further analysis might show the possible monetary worth of such education in the Hindu marriage market, where an educated bride fetches a wealthier husband. New Delhi papers were full of advertisements for wives with higher degrees. Higher education took its place among desired qualities of wives beside such attributes as higher caste and fair complexion. How much is the return on such investment in education? In fact, the closer a girl approaches 0 as income, one might say the better her financial position as the wife of a wealthy husband.

The 11th grade students estimated the average difference in income between those who leave school at their

present level and those who leave school with their Bachelor's degree at about Rs. 150 a month; they estimate the average income difference at the "over 14" level at between Rs. 200 and 249.

Educational Aspirations and Area of Residence

(See Appendix, Table D-13)

Out of the eight children from Raajpur, all three boys wished to go beyond grade 14 in their education, and all five girls did not want to go beyond grade 8, with two out of the 5 wishing to stop at grade 5, their present grade. No other girl in the school wished to terminate her education before high school, while 18 other boys wished to terminate their education by the end of 14th grade. The three boys from Raajpur were composed of two Jats (the highest caste in the village) and one Muslim. The five girls in the village were composed of four Jats and one Other Hindu (vegetable grower). Two of the four Jat girls desired to leave school at the end of grade 5.

The Question of Housing

Seven of the houses of students in the primary school were mud houses, excluding seven which were half brick and half mud. Eight of the houses of children in 6th grade, 5 of the houses of children in 9th grade and 4 of the houses of students in 11th grade were mud houses. In many cases

these belonged to Brahmins and farming Jats. It is noteworthy that only children in 5th grade elected to declare their homes as being half-mud, half-brick. In this region, mud houses are constructed of the clay soil of the Ganges River basin and are often strengthened with brick in strategic places. They harden to surprising strength and people in the village were quick to point out that they would not wash away in the monsoons. In general, the wealthier families in the village tended to have more brick in their homes and were most often members of the higher castes, though there was one Chamar (leather worker, Scheduled caste) who had built himself a brick house.

Parents

It had intentionally been planned to question parents of children in the village about the education of their children. It was soon discovered, however, that the parents of children who went to school almost invariably gave the same responses as the children, in many cases were harder to approach than the children and sometimes knew less than the children. Consequently, it was decided to concentrate on the parents of children who did not attend school.

My first contact was with a Muslim tailor in the village through a personal letter sent by Joseph Elder⁶² who had lived

⁶²Elder, Industrialism and Hindu Society, op. cit.

in this village for 16 months at one time, and had returned since for brief visits. This man was illiterate and had his son read Elder's letter to him. He lived in a mudwalled hut with two rooms. He did his tailoring in one room, and was training an apprentice at a small manual machine, sitting cross-legged on a mat on the earthen floor. During my visit, a neighbor came in with his son. Apparently the boy was failing in school, and the tailor explained the problem. This boy's father was going blind, and so could not afford the private tuition fees that were being asked by the teacher. The boy was now 16 and in the ninth grade. On being asked further details the boy confessed that he could not manage his school work, and the tailor supported him in the view that a child could not manage in school without private tuition. He also felt that this problem had grown into every facet of life, and that without extra money for bribes, etc., a person could not go very far. He said that he himself had to pay Rs. 200 to get into the sugar factory, where he was now earning Rs. 85 a month in training and soon would be earning Rs. 90 a month. He would like his boy to continue his schooling, as he felt that he could then get a better job in government.

As we walked around the village and saw children at work and play, further questions were asked about these children. Two young boys were taking care of two buffaloes while their father walked along. They were Muslim, and

upon being asked about their schooling, the tailor explained that since independence, Muslims have gone "Kaffir," a term that signifies that they lost all sense of living up to rules of behavior, since they felt that with the going of the British, they had been sacrificed to the Hindus who would not give them a fair deal. So these children had been left to themselves and had dropped out of school since they felt that it was not worth it to be schooled.

We saw a young girl playing with cowdung. A higher caste boy laughed at her and said that she spent her time playing with cowdung, with which her parents were building a pile of cakes for their fireplaces (chulhas). The girl's caste was Lohar (ironworker) and members of this caste never send their girls to school, considering schooling of no use to them. I asked the upper caste boy why he did not go to school. He excused himself by saying that he had a fever.

The leather workers (chamar) were also very reluctant to send their children to school. Elder⁶³ speaks about this in his thesis and gives as the reason for it the world view of the chamars. He claims that their children did not spend their time in any sort of work. The chamars occupy a large section at one end of the village and in this section there were many children playing and taking part in the routine village life throughout the day.

⁶³Ibid., p. 144.

CHAPTER V

SUMMARY AND CONCLUSIONS

The purpose of this chapter is to summarize the findings of this study and to draw conclusions based on the findings that may advance understanding and development of theory in the field of education for economic growth in India. Each chapter will be summarized individually in relation to the total study.

Summary and Findings

This investigation was a case study of the relation of education to economic growth in one underdeveloped nation - India. Data was gathered at the macro level, i.e., the central government level, and at the micro level, i.e., the Indian village. Data concerning the nation's educational efforts, as reflected in such things as literacy rates, school enrollments, school dropouts and manpower, were gathered in India through interviews with government officials and from official publications of the Indian government.

The village of Raajpur in Uttar Pradesh province was selected for intensive study. This particular village was selected primarily because contacts which Professor Joseph Elder had established there in the course of his study of the effect of industrialism on the Hindu ethic could be used to facilitate access to and interviews with teachers, pupils and citizens of

the village. A second reason for its selection was the fact that Raajpur, associated as it is with a modern sugar factory, provided a unique opportunity to examine attitudes toward education in a village which represents the prototype of the development which many Indian planners envision.

The investigator spent several weeks in Raajpur during February, March and April of 1965. While there he interviewed officials of the sugar mill, school officials and teachers, pupils in the schools and parents in the village. He also administered a questionnaire to 5th grade pupils at the village primary school and 6th, 9th and 11th grade pupils at the Inter-College near the village. The interviews and questionnaires were structured to elicit the attitudes held by respondents concerning the economic returns to education.

Concept of Human Capital

The theory of "human capital," with its connotation of treating human beings within the economic frame of reference, has been advanced by men such as Theodore Schultz. Schultz has ascribed most of the residual element of economic growth, which cannot be accounted for by the traditional inputs of capital and labor, to education. While it is encouraging for educators to see the emphasis in man's development come to rest on man himself, the application of this investment in human capital seems to require still sharper theoretical formulation and more adroit application. A causal relationship between any particular

educational pattern and any particular form of economic development has not yet firmly been established. What investment in human capital means in practice is still open to educated guesses; proponents of this investment differ in their assumptions, their views and their applications.

Schultz has attributed the puzzles and paradoxes of the underdeveloped economies to the failure to understand the importance of investment in human beings, and has applied his notion of "foregone income" as a part of the costs of schooling to education in underdeveloped countries. Lewis entertained the idea that selective education should be tied to economic development and presents intriguing equations which would solve these problems once more research is done on such variables as "the ratio of number of secondary type jobs to adult population." Valzey has questioned the whole idea of education, as a blanket order, as the touchstone of economic growth. With the aid of comparative information on education, he demonstrates that different types of education in different types of societies produce different solutions. He takes to task such ready made cures as the raising of teacher salaries and the idea that free primary education is a fundamental right. Harbison, with his manpower studies, rated nations on an educational-economic scale and has suggested appropriate incentives for individuals to fulfill the aims of national policy. Curle has shown how the complication of political structure added to economic and social mobility, affects education as a factor in economic growth.

Barbara Ward advocated monetary assistance to India on the part of the Atlantic nations, while Jean Bowman made a plea for more basic information on underdeveloped countries rather than theoretical interpretations. Tinbergen and Bos have given somber figures on the problems of educating underdeveloped nations in terms of teacher training requirements which seem beyond the possibility of achievement.

India qualifies as an underdeveloped nation by virtue of the fact that it is one of the nations of the world which has a per capita income of less than \$100 a year. The results of this low level of income were spelled out in terms of the intake of calories per day (with lower ratios of animals to population and a correspondingly low intake of eggs, fish and milk, not to mention meat); a low but increasing life expectancy; and a high annual birth rate, resulting in a very high annual increase in population. Its population was examined in terms of its small urban component and heavy dependence on agriculture, while its financial condition is demonstrated in terms of the origins and disposition of its gross national product with dependence on agriculture in its makeup and net capital inflows for capital accumulation.

Education in India: The National Scene

Education, as it relates to economic growth in India, was examined in some detail beginning with data on literacy rates. These show a relatively small real increase in the number of

literate against the tide of the increase in population. Primary, middle and secondary schooling also show increases, but these are far short of the hoped for 100 per cent of the population below the age of 11 attending primary school. The Target for the Fourth Five Year Plan is to bring 42 per cent of the 11-14 group (middle school) to school, and to educate some 20 per cent of the secondary school age group. While university education has more than doubled since independence, the accent is shifting to greater quality, which is a part of the Fourth Five Year Plan now in the making. The question of wastage in education (the drop-out problem) was examined for its effect on loss of talent and waste of resources on unlikely candidates for examinations. Comparisons of education were made with such selected countries as the U.S.S.R., the United Kingdom, Japan, China and the United States. They revealed such striking features as high rates of continuation of Indian primary school students into secondary schools relative to China, and the high rate of continuation of Indian secondary school students into higher education in comparison with the United Kingdom (in 1955-56) and China.

Manpower was given extensive treatment in terms of manpower in teaching, including manpower at various school levels, pupil-teacher ratios, comparative figures with other countries and teacher training; manpower in technical and vocational training, including detailed information on various trades and engineering skills; manpower in science and engineering, including

comparative figures for other countries for diploma and degree courses; manpower in medicine in terms of medical schools and the numbers of doctors turned out in comparison with other countries. The Harbison capsule on development was introduced to sum up India's ranking with the five other countries previously used.

Unemployment in India, both rural and urban, was examined for various levels of schooling and it was found that among the unemployed, percentage of persons at the matriculation and above level was higher than among the employed, for both rural and urban areas. This was also true for those educated below the matriculation level in urban areas, but was untrue for the illiterate, where percentages were the same in rural areas and lower among the unemployed than among the employed in urban areas.

The Five Year Plans were shown in their relationship to education, with greater emphasis on education noted as the Plans progressed. From the point of view that education provided only external effects of maintaining law and order and cooperation with the government in its capital-building endeavors, thinking has progressed to the point where education is now regarded as an economic investment in its own right. While primary school education received the greater share of financial allocation for education in the First Plan, more assistance was provided for secondary and technical education in the succeeding plans. The present plans for the Fourth Five

Year Plan envisage a far greater tie-in with economic development and certain changes in curriculum, for example, making secondary education terminal in character and providing for greater investment in research in universities.

The concept of a residual element in economic growth which may be ascribed to education has found a parallel in India, where a residual to the value of at least Rs. 2,520 crores (tens of million) has been calculated on the basis of 4 per cent return on capital input. On this basis, capital input would have accounted for only Rs. 480 crores on an investment of Rs. 12,000 crores. With the marginal productivity of labor being considered at zero, the entire residual can be considered as coming from improved technical skills, education, dissemination of information and improved management. This view has been countered by Harberger's analysis, which claims values as high as 26.1 per cent return from capital investment in private companies. Were this applicable to all production in India, it would account for the entire residual.

Indian deficiencies in education were examined under headings of finance, agricultural production, and population control. The latter is receiving an increasing amount of attention as a major cause of India's economic plight.

Indian Education: Case Study of a Village

The village of Raajpur, which is located in the State of Uttar Pradesh and which is associated with a modern sugar

factory, was chosen by Elder for his study of an Indian agricultural unit in the process of industrialization. Education in this area was examined with special reference to the effects of caste on the number of pupils at different levels in the schools of the area, their ages, fees, other out-of-pocket costs of education, educational aspirations, estimated future income, foregone income and the education of their fathers and mothers. Educational aspirations were also examined in relation to land-ownership, estimated future income and the extent to which anticipated future income differed from the income received by those who left school at the various grades examined.

Background data concerning education in the State of Uttar Pradesh included data on literacy rates (below the national average), primary schools (below the national average), middle schools (slightly below the national average), high schools (slightly below the national average) and university education (above the national average). Manpower training in U.P. was shown to be below the national average in engineering graduate output; considerably above the national average in agricultural graduate output; and considerably below the national average in veterinary graduates. In medical facilities, Uttar Pradesh was moderately lower than the national average in urban areas and considerably below the national average in rural areas. Data concerning manpower in teacher training show that primary school teachers in Uttar Pradesh are higher than the national average in terms of the percentage who are trained, while

pupil-teacher ratio is below the national average. The state is higher than the national average for both categories in middle school and high school. The growth in teacher training schools was considerably below the national average, while the growth of teacher training colleges was higher than the national average.

The State of Uttar Pradesh has a bewildering array of public and private schools, aided on the basis of matching funds similar to those provided during British times. Independence has brought other problems among which are the expansion in the number of school-going children, the curtailment of aid to mission schools from abroad necessitating government aid, serious malpractices in municipal schools where teachers are poorly paid and children often drop out of school at an early age and lapse back into illiteracy, and the lack of financial resources in district board*schools. The state ranks first in number of universities. Greater financial control is exercised over the new government universities, while curriculum and academic affairs are managed by the universities themselves under advisement from Central educational bodies.

The village of Raajpur is typical of agricultural villages in the heartland of Northern India. Elder's sociological study of conditions in the village provided the framework for an investigation of education in the area. For purposes of this study the castes were divided into six categories: Brahmin, Other Twice Born, Jat (the dominant high caste in the village),

* antarim zilla parishad

Other Hindu (the service castes), Non-Hindus (predominantly Muslims) and the Scheduled castes (the Untouchables). Elder's study pointed out that education does not necessarily change Hindu attitudes; in fact, it can be used to reinforce Hindu ideas. He also found that (1) the higher the father's occupation, the higher the son's aspirations, (2) high-caste and minority-group sons aspire to more education than low-caste sons, while (3) high-occupation fathers and (4) high-caste and minority-group fathers wished they could have studied farther than low-caste fathers.

In the present study, the author questioned (1) mill officials; (2) school officials; (3) children in the schools, made up of the primary school (5th grade) and the Inter-College (6th, 9th, and 11th grades) and (4) parents in the village who did not send their children to school, about the economic return to education as each group saw it. School officials and teachers were very much concerned with their low salaries. Primary school teachers exhibited religious zeal for certain aspects of their work and little concern for other aspects; inter-college teachers were cynical of educational authority and were impatient to take action in the form of a teacher's strike which had been threatened in the state. While primary school teachers supplemented their low salaries with work on their fields, secondary school teachers secured additional income by tutoring their pupils after school. Tutoring costs were ascertained from interviews with teachers. For 6th grade,

tutoring costs averaged Rs. 15 a month; for 9th grade, they averaged Rs. 25, and for 11th grade, they averaged Rs. 35. Tutoring was most often taken by students for the last three or four months of the year before examinations, though there were some students of means who were tutored throughout the year. This was a significant out-of-pocket cost, sufficient to preclude some pupils from attending school.

The children in the schools answered the questions in written form. Data gathered in this way were tabled and the following findings were noted:

1. There was predominance of the Brahmin and Other Twice Born Castes in all grades with strong rivalry between these two groups. Also, there was strong representation of the Non-Hindu group in the Intermediate of Science.
2. Brahmins tended to be younger at all levels than Other Twice Born and Non-Hindus.
3. Brahmins, Other Twice Born and Non-Hindus reported paying more in fees and other costs.
4. Without financial assistance, Brahmins held the highest aspirations for education, followed closely by the Non-Hindus and the Other Twice Born. If financial assistance were made available, there were considerably more pupils of all castes who aspired to graduate study.
5. With two exceptions, Brahmins, Other Twice Born and Jats expected higher wages than their counterparts in all cases. The two exceptions were higher wages expected by

Non-Hindus in the Intermediate of Science and "0" wage expectations held by Brahmin, Other Twice Born and Jat females.

6. Brahmins, Other Twice Born and Other Hindus were strongly represented in the higher amounts of foregone income.
7. Fathers and mothers of Brahmins and Other Twice Born had more years of schooling with the exception of the Non-Hindus in the Science Intermediate class, who came nearer the level of the Brahmins in that grade.
8. The children of larger landowners tended to hold aspirations at least as high as those held by the children of the landless (in most cases in "service"), while small landowners' children tended to aspire to slightly lower levels of education.
9. In general, the higher the level of education aspired to, the greater the future income expected, with a strong representation of "0" income with Brahmin, Other Twice Born and Jat females.
10. Those pupils who aspired to a higher level of education anticipated correspondingly higher levels of income as compared to those who leave school in their present grade, except for the block of females who estimated "0" difference, presumably because of their anticipated marital status.

Parents of children who did not go to school were often non-communicative, giving the impression that they

were either ignorant of the whole proposition or that it was something totally beyond their power. As noted by Elder, some of the lower castes such as the Chamars (leather workers) rejected school as a part of their world-view. Their children were always to be found playing in the paths of the village. Girls of lower castes were also noticeably absent from school.

CONCLUSIONS

India needs economic growth in terms of her extremely low standard of living, hard pressed as she is by the explosive growth of her population. She needs economic growth to exist as a viable unit. To examine economic growth is difficult; to go further and examine for the effects of education on economic growth is still more difficult.

While India's political structure seems set in a democratic mold, it is precisely in the economic field that India lags. It is common knowledge among economists that the controlled Indian economy does not permit the free market features of prices reflecting marginal productivities to demonstrate the returns to investment in human capital as a part of the famous Schultz residual.

We are left, then, with a society which is not economically rational in terms of prices and wages reflecting marginal productivities, while it is politically wedded to the demo-

cratic form of political structure, albeit with gross social inequalities. Within this framework, what is the relationship in terms of the individual to education? We have seen the patterns of national policy as they changed through the Five Year Plans and as they have been guided by national educators and planners. We have seen the commitment to manpower planning in terms of schools and teachers, factories and engineers, medical schools and doctors, agricultural colleges and agricultural graduates. What then in a typical unit of this vast society is the attitude of the individual consumer towards this pattern of education, which is claimed so necessary for the development of the country? This society is not given to coercion to fill its ranks in required fields, as in a totalitarian society; here the democratic system of choices must prevail. If it is the individual who is to make the choice, and to make it on the basis of incentives, what is the play of costs and rewards that will influence his choosing the education that works toward economic productivity?

Conclusions Regarding Education at the National Level

On the basis of the data showing past accomplishments and the present status of education in India, it may be concluded that:

1. Application of the Schultz model to determine return to investment in education produced conflicting results, depending upon the rate of return to investment in

physical capital which is assumed. It may be questioned whether the Indian economy, which is controlled to a considerable extent by the central government, is susceptible to application of the Schultz model per se.

2. Indian planners have demonstrated increasing recognition of the role of education in economic growth as demonstrated by the increased allotments to education in the succession of Five Year Plans.
3. India has made impressive strides in education since she became independent as shown by the rapid increase in the number of educational institutions and the number of pupils in school.
4. Population growth in India has been so rapid that it has frustrated the goal of having universal public education through grade 5. Had population size remained constant, this goal would have been achieved. Population growth, however, has resulted in relatively small gains, percentage-wise, in achieving the educational goals envisioned in the several Five Year Plans.
5. Trained manpower in professional and technical fields is not adequate to support a rapid rate of economic growth. While improvements have been made in the number of schools and the output of graduates trained in professional and technical skills, again, the gains have been offset by population growth.
6. Additional attention to the quality of education is

necessary. That is, the nature of the educational programs which are conducted in the schools of India is generally not conducive to the development of marketable skills. It would appear that additional attention to this area of education, without sacrificing the vital aspects of the traditional educational programs, is necessary if education is to achieve maximum utility as an instrument for economic growth.

Conclusions Regarding Education and Productivity in the Mill

Physical and psychological adjustment were required on the part of both the people of Raajpur and the managers of the Seeta Ram sugar factory to adapt themselves to the functioning of a modern industrial operation. Where Elder examined the effects of industrialization on the Hindu ethic in the area, this study looked into the effect of the Hindu ethic on the working of the mill. How has the mill fared in terms of productivity? What part has greater education in the area and among the workers in the mill played in productivity? It is significant that one of the compensations on the part of the owners of the factory to the people of the village was the building of the primary school. Has it paid its way in terms of productivity in the factory?

For information on the production in the factory since 1940 (see supra, p. 179) it is noted that factory production has increased by not more than 65 per cent from 1940 to 1965.

The number of workers has increased by less than 50 per cent, and capital investment has more than doubled. Wages have increased at a greater rate than inflation. The education of the labor force has risen from 3 graduates and 15 per cent of workers literate in Hindi in 1940 to 7 graduates and 40 per cent of workers literate in Hindi at present. In his letter, the Chief Chemist stated that the 40 per cent who are illiterate perform mostly unskilled jobs.

It may be concluded, because of caste constraints, that literacy and education did not necessarily go hand in hand with greater efficiency in the mill. Each job at the molasses machines, for example, which could have been performed by one literate worker now requires the efforts of two or three, including the efforts of a literate worker who can read directions. In fact, certain jobs could be performed only by members of a certain caste. Even if they were literate, the members of certain castes would only be assigned jobs which did not require a literate worker. Engineers claimed they could produce the same amount of sugar with just 300 workers using newer machines which were built in India if full and efficient use of personnel could be had.

At the present level of operations, it can be concluded that productivity in terms of sugar production had not increased at a rate commensurate with the increased capital investment and education of the labor force. In fact, education in the labor force did not markedly affect the earning power of the

workers. Rather, their earning power was much more a product of their caste and status. It is entirely conceivable that members of the lowest castes would have been unable to hold correspondingly higher jobs even if they were able to achieve any education.

Another complexity which Elder identified was the amount of accepted corruption that went on in the mill. The orientation of the employees of the factory was not towards greater production. The complex network of company and government officials who were paid low basic salaries, but who supplemented their salary with "cuts" on prices paid for sugarcane and for hiring workers, and the lack of motivation of the rank and file workers with tenure, made the measurement of productivity at the mill difficult, to say nothing of measuring the effect of education on productivity.

Conclusions Regarding Return to Pupils from Education

As a general conclusion, it may be stated that there are factors other than the purely economic which are decisive in determining who goes to school and for how long, e.g., the caste and socio-economic status of the pupil's family, a son's desire for a job that may pay no more but which has higher status, and a girl's desire for a higher status husband and a more comfortable home. These seem to be the critical variables in affecting who does and who does not go to school, and how far they go in their education.

At the same time, the overwhelming appreciation for education to the highest degree when the possibility of financial aid was raised revealed recognition of the meaning and value of education in terms of status, and freed from the element of expense.

Conclusions Regarding Foregone Income

Foregone income was not a decisive factor in this area in determining whether children went to school. For most children, there was little, if any foregone income of which they or their parents were aware. They did not attend school simply because their parents were too poor to send them to school. Indian children considered the question only from the point of view of members of their own caste and area. As to what these children did when they stayed away from school, the answer was invariably, "Help at home," "Do housework," or "Nothing." They interpreted potential earning power as their earning power as adults. Students were unable to understand the question when asked, "What would you earn if you left school now?" They responded in terms of what they would earn as adults.

Conclusions Regarding Out-Of-Pocket Costs to Pupils

It may be concluded from the data which was gathered from pupils and teachers that the out-of-pocket costs to pupils were sufficient to preclude a number of pupils, particularly those who were members of the lower castes, from attendance at

school. The fees charged students increased at each grade level for which data was gathered, as did tutoring costs. In spite of official admonitions against tutoring, the practice appeared to be widespread and constituted a significant source of income for teachers above the 5th grade level.

Conclusions by Education Level Pertaining to Income, Caste and Sex

Primary Level

It may be concluded that by the time 5th grade level in a basic primary school is reached, the drop out from school of practically all pupils who are members of Scheduled castes has already taken place. Among the other castes, principally Brahmin, Other Twice Born, Jat and Non-Hindu, only boys anticipate any financial gain from further education; girls do not anticipate any financial gain from further education, expressed directly in the form of earnings.

Secondary Level

At 6th and 9th grade levels, certain differences can be noted. On the basis of our sample it may be concluded that:

1. At the 6th grade level, boys still dominate as potential higher income earners. Brahmins lead, followed by the Other Twice Born, both in educational aspirations and greater difference in salary expected.
2. At the 9th grade level (where our sample had an over-

whelming number of girls who favored marriage without having to work and earn themselves), there are some girls (all Other Twice Born) who anticipate higher earning capacity for themselves as a result of additional education.

College Level

From differences between specialized science education and general education which showed up in our sample, it may be concluded that:

1. Males predominate in the science field, which has growing prestige, and greater financial returns and security.
2. Pupils demonstrate a sharper awareness of the return to investment in education. For example, the median value for education up through 13-14th grade is Rs. 150 per month, while the median value for education "over 14" is around Rs. 200 per month.

From the data for the class in which specialized education in science was given, it may be concluded that:

1. Pupils who are members of the Brahmin and Other Twice Born castes predominate at this level.
2. Pupils who are members of a minority group - the Muslims - anticipate even greater financial returns from their education than do other pupils.

IMPLICATIONS

A number of implications for national policy may be identified from the data which has been presented in this study. It should be emphasized at the outset, however, that a case study of the type herein reported does not permit sweeping generalizations. A case study of one Indian village, in a nation in which there are hundreds of thousands of such villages, does not permit one to generalize from the data with a high degree of confidence. To the extent that the village of Raajpur is similar to others, one may expect to obtain similar findings in other villages. To determine the extent to which such similarities exist was beyond the scope of this study. With the above limitations in mind, the following implications are offered.

Implications Regarding the National Picture

1. The objectives of national policy have been frustrated by the population explosion that has taken place in India. Unless the population increase is curtailed, it will be well-nigh impossible to achieve any substantial measure of success in economic development. The race against illiteracy, the goal of universal primary school education, the training of manpower in the fields of science and engineering are constantly being overtaken by the sheer weight of numbers. The hope that greater

per capita income will automatically cause a levelling off in the birthrate must not be fostered. Such hopes are based on the experience of other nations and other cultures, and too much hangs in the balance for India to adopt a passive attitude towards this grave problem which has already overcome the best efforts of Indian planners through the decade of the 50's.

2. Apart from this quantitative problem, there are also qualitative difficulties. The imbalance between higher training in the humanities and the sciences, in a country so needful of scientists and technicians, is a perennial problem that flies in the face of monetary inducements. Which brings us to the question of attitudes. Of what use is it to show greater returns to education in terms of economic productivity if people are not concerned with economic productivity? Even if it were possible to demonstrate high returns using the residual concept, the utility of such returns are limited and circumscribed by the nature of the culture and attitudes of the people. In this milieu it is not sufficient to denote what goes on in schools as education, without knowing what goes on under the name of education. It is possible that the schools foster or perpetuate attitudes which tend to frustrate the work of the national planners in their efforts to channel people and ideas into more economically productive ways of thinking. While there is great

interest in further education at all levels - the Indian people are neither a boorish nor a primitive people - too much emphasis is placed on traditional academic and literary education at the expense of education which produces marketable skills. Such an emphasis can only be found too expensive at this stage of development in India.

3. Assuming progress toward solving the problems identified above can be made, the problem of opening doors to all talent looms ahead. Apart from caste barriers - which seem extremely difficult to eradicate - the sheer cost of education in terms of fees and out-of-pocket, including tutoring, create financial barriers which for many pupils are insurmountable. All the stir about paying higher salaries to teachers hides the cruel fact that many teachers manage to exist only because they are able to command tutoring fees, which represent the highest price of all to society; their price is the drop-out of pupils who cannot afford to pay. It might even be worth subsidizing teachers' wages through international aid as proffered by certain Western economists. The price individual pupils must pay for education is much too high in terms of the loss of national talent; human capital of the highest order.
4. In view of the strong interest in additional formal education which was expressed when the possibility of

financial assistance was raised, it may be wise to make available to qualified pupils financial grants designed to attract manpower to the professional and technical fields where it is now in short supply. Such financial incentives could serve to allocate national manpower resources to appropriate areas of specialization at a relatively low cost to the national government. In fact, long-term, low-interest loans with repayment deferred until the recipient has entered the work force, and even forgiven for those who enter certain occupations, might provide a very effective way to stimulate economic growth through education at small cost to the national government. Of course, removal of caste barriers and closer control of educational programs would be needed to make such a program fully effective.

Implications for National Policy Towards Certain Groups

1. Members of Scheduled castes do not remain in primary schools and education seems to have little utility for them. Such persons appear to lack opportunity to escape their low status through financial gain. It might be necessary to also concentrate on raising their status through other means, preferably non-economic, before economic considerations have meaning.
2. The importance of possessing some status is evident among Non-Hindus such as the Muslim, who, while they lack caste

among the majority, still have prestige from non-economic factors such as past history, etc. Here financial considerations have great attraction. Indian economic policy would do well to encourage the business interests of such alienated groups as the Muslims and Sikhs.

3. Females of Other Twice Born castes evinced considerable interest in financial return from education. Additional talent in seriously short occupations might be gained through greater use of female members of this caste. The fact that higher caste girls did not evince interest in potential earnings hides the feature that higher education is one of the qualifications for a financially successful marriage. From a purely economic point of view this investment in further education will not be lost entirely, as it is likely to have the effect of spurring husbands on to higher economic effort and will at least provide a higher educational milieu in the home for growing children. It may eventually make the culture more economically motivated through the ambitions of such women.

APPENDIX A

QUESTIONNAIRE USED WITH MILL OFFICIALS

1. How does the mill benefit from the school in the village?
2. Do their students become better workers?
3. Any productivity increase?
4. Better citizens?
5. Do you think this schooling is enough for them? Would you recommend more schooling? Less schooling? Any difference in curriculum that you would recommend?

APPENDIX B

QUESTIONNAIRE USED WITH SCHOOL OFFICIALS

AND TEACHERS

1. Do you think your teaching makes these pupils better workers at the mill?
2. What changes would you introduce in the curriculum to effect improvement in pupils as future workers?
3. What caste are you?
4. What would you do for the teaching profession in this country?
5. Do you have a sufficient supply of teachers for this area?
6. Can this unit pay for more teachers if they were available?
7. What are the characteristics of the best students?
Who are they? Who are their fathers?

APPENDIX C

QUESTIONNAIRE USED WITH SCHOOL PUPILS

Name of School -

Name of village you come from -

Age -

Grade -

1. What do you pay for schooling here, a.) fees? b.) books, etc.?
2. What kind of house do you live in? kuchha or pukka?
3. How many bighas of land do you own?
4. What caste are you?
5. Up to which class will you study?
6. What work will you do when you leave school?
7. How much will you earn when you leave school?
8. What would you have earned if you did not attend school?
9. What is the level of your parents' schooling?
father? mother?
10. If money were available from your family or the government, how far would you like to go on in your schooling?
11. What are the reasons, as you see it, why other children of your village and of your caste do not go to school:
12. In which way do they help their parents or otherwise reduce expenses at home by not coming to school?
13. What do you think they earn by going to work instead of coming to school?
14. How much less do you think they will earn, each month, for not having gone to school as you have?

APPENDIX D

ANSWERS TO QUESTIONS

IN APPENDIX C BY 5th GRADE PUPILS

TABLE D - 1

Caste Distribution and Number of Students

Caste	Numbers		
	Male	Female	Total
Brahmin	5	2	7
Other Twice Born	4	3	7
Jat	3	4	7
Other Hindus	4	1	5
Non-Hindus	5	1	6
Scheduled	4	0	4
Total Students	25	11	36

TABLE D - 3

Caste and Fees

All paid the fee of 6 n.p. (Re 0.06) per month.

TABLE D - 4

Caste and Costs Other Than Fees

Caste Distribution													
Costs other than fees (Rs.)	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		Total
	M	F	M	F	M	F	M	F	M	F	M	F	
No answer													0
Don't know													0
0													0
0.01-0.99											1		1
1.00-1.99	3		2	1		3			3		2		14
2.00-2.99	1		2		2	1	4	1		1	1		13
3.00-3.99	1	2											3
4.00-4.99				2									2
5.00-5.99									2				2
6.00-6.99													0
7.00-7.99													0
8.00-					1								1
Total	5	2	4	3	3	4	4	1	5	1	4	0	36

TABLE D - 2

Caste Distribution and Age of Students

Caste Distribution													
Age	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	Total
9	1		1							1			3
10				3			1				1		5
11	1	1	1		1	1	2		1				8
12	3	1	2		1	3	1	1	1		3		16
13					1					3			4
14													0
15													0
16													0
Total	5	2	4	3	3	4	4	1	5	1	4	0	36

TABLE D - 5
Caste and Educational Aspirations

Educa- tional aspira- tions (years)	Caste												
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	Total
0 - 5						2							2
6 - 8	1					2		1					4
9 - 10	1	2	3	1			1		2	1			11
11-12			1	2	1		1		2		2		9
13-14	3						1				1		5
Over 14					2		1		1				4
Don't know											1		1
Total	5	2	4	3	3	4	4	1	5	1	4	0	36

TABLE D - 6

Caste and Estimated Future Income

Estimated future income (Rs.)	Caste													Total
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled			
	M	F	M	F	M	F	M	F	M	F	M	F		
1 - 49						1								1
50 - 99		1	1					1			1			4
100-149	2	1	1						3	1	1			9
1950-199					2	3	1		1		1			8
200-249	1		2	2							1			6
250-299							1							1
300-399	1				1		2		1					5
400-499				1										1
500-599														0
600-699	1													1
700-														0
Total	5	2	4	3	3	4	4	1	5	1	4	0		36

TABLE D - 7

Caste and Foregone Income

Foregone income (Rs.)	Caste												
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	Total
No answer	1		1			1	1	1			2		7
Don't know	1	1							1				3
0			1	1		1				1	2		6
1- 24													0
25- 49	1								1				2
50- 74	1		2		1		3						7
75- 99									2				2
100-124		1		2	1	1			1				6
125-149						1							1
150-199	1												1
200-299													0
300-399					1								1
Total	5	2	4	3	3	4	4	1	5	1	4	0	36

TABLE D - 8

Caste and Education of Father and Mother

Caste														
Education of father and mother (years)	Brahmin		Other Twice Born		Jat		Other Hindus		Non-Hindus		Scheduled		Total	
	Fa.	Mo.	Fa.	Mo.	Fa.	Mo.	Fa.	Mo.	Fa.	Mo.	Fa.	Mo.		
No answer		1											1	
Don't know	2	2	2	3							2	2	13	
0	1	4		4	5	7	4	5	5	6	2	2	45	
1- 5	1		2		2								5	
6- 8													0	
9-10			2						1				3	
11-12							1						1	
13-14	2												2	
Over 14	1		1										2	
Total	7	7	7	7	7	7	5	5	6	6	4	4	72	

TABLE D - 9

Caste and Educational Aspirations With Aid

Educational Aspirations with aid (years)	Caste												Total
	Brahmin		Other Twice Born		Jat		Other Hindus		Non-Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	
0- 5													0
6- 8	1					1							2
9-10	1							1					2
11-12				1		3							4
13-14		1	1				1		1				4
Over 14	3	1	2	2	3		3		4	1	4		23
Don't know			1										1
Total	5	2	4	3	3	4	4	1	5	1	4	0	36

TABLE D - 10

Educational Aspirations and Landownership

Educational Aspirations																		
Landowner- ship	0-5		6-8		9-10		11- 12		13- 14		Over 14		No answer		Don't know		Total	
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F		
No answer																	0	
Don't know																	0	
Farming	2		2	2	2		2		1		4						13	
Service			1	1	5	4	3	2	3		1						20	
Business							2								1		3	
Total	0	2	1	3	7	4	7	2	4	0	5	0	0	0	1	0	16	

TABLE D - 11

Educational Aspirations and Estimated Future Income

Educational Aspirations															
Estimated Future Income (Rs.)	0-5		6-8		9-10		11-12		13-14		Over 14		Don't know		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
0- 49		1													1
50- 99				1	1	1	1								4
100-149			1		3	2			1		1		1		9
150-199		1		2	1		2				2				8
200-249					2	1	1	1	1						6
250-299											1				1
300-399							3								3
400-499								1	2						3
500-599															0
600-699											1				1
700-799															0
Total	0	2	1	3	7	4	7	2	4	0	5	0	1	0	36

TABLE D - 12

Educational Aspirations and Difference in Salary From Those
Who Leave School Now (5th Grade)

Educational Aspirations															
Salary Difference (Rs.)	0-5		6-8		9-10		11-12		13-14		Over 14		Don't know		Total
	M	F	M	F	M	F	M	F	M	F	M	F			
No answer					2		1								3
Don't know													1		1
0	2		1	3	3	4	5	2	1		5				26
1- 9									2						2
10-19					1				1						2
20-29									1						1
30-39															0
40-49							1								1
50-															0
Total	2	0	1	3	6	4	7	2	5	0	5	0	1	0	36

TABLE D - 13
Educational Aspirations and Area of Residence

Educational Aspirations (Years)	Area of Residence						Total
	Raaipur		Mill		Other		
	M	F	M	F	M	F	
0- 5		2					2
6- 8		3	1				4
9-10			2	3	5	1	11
11-12			2	2	5		9
13-14			2		2		4
Over 14	3		1		1		5
Don't know					1		1
Total	3	5	8	5	14	1	36

APPENDIX E

ANSWERS TO QUESTIONS IN APPENDIX C

BY 6th GRADE PUPILS

TABLE E - 1
Caste Distribution and Number of Students

Caste	Numbers		
	Male	Female	Total
Brahmin	4	6	10
Other Twice Born	13	5	18
Jat	3	0	3
Other Hindus	1	1	2
Non-Hindus	0	1	1
Scheduled	1	0	1
Total	22	13	35

TABLE E - 2

Caste and Age of Students

Caste													
Age (years)	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		Total
	M	F	M	F	M	F	M	F	M	F	M	F	
9	1	1	2	1									5
10	2	3	4	3			1		1				14
11	1	1	2	1			1						6
12		1	2		1								4
13			2		2								4
14			1								1		2
Total	4	6	13	5	3	0	1	1	0	1	1	0	35

TABLE E - 3

Caste and Fees

All paid the fee of 94 n.p. (15 as. old currency) (Re. 0.94)

TABLE E - 4

Caste and Costs Other Than Fees

Cost other than fees (Rs.)	Caste												Total
	Brahmin		Other Twice Born		Jat		Other Hindus		Non-Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	
No answer													0
Don't know													0
0													0
0.01-0.99	1	1	6	2	1								11
1.00-1.99	2	2	1	1			1				1		8
2.00-2.99		1	4		2					1			8
3.00-3.99		1	2	2				1					6
4.00-4.99													0
5.00-5.99	1												1
6.00-6.99													0
7.00-7.99													0
8.00-8.99		1											1
Total	4	6	13	5	3	0	1	1	0	1	1	0	35

TABLE E - 5
Caste and Educational Aspirations

Educational Aspirations (Grades)	Caste												Total
	Brahmin		Other Twice Born		Jat		Other Hindus		Non-Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	
6- 8													0
9-10	1	2	2	3	1			1					10
11-12	3	2	6	1	2		1				1		16
13-14		2	2	1						1			6
Over 14			2										2
Don't know			1										1
Total	4	6	13	5	3	0	1	1	0	1	1	0	35

TABLE E - 6
Caste and Estimated Future Income

Estimated Future Income (Rs.)	Caste												Total
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	
0		5		3						1			9
1- 49								1					1
50- 99			3	1	1								5
100-149			2	1	1		1						5
150-199					1						1		2
200-249	2	1	4										7
250-299	1		2										3
300-399			2										2
400-499													0
500-599	1												1
600-699													0
700-799													0
800-													0
Total	4	6	13	5	3	0	1	1	0	1	1	0	35

TABLE E - 7
Caste and Foregone Income

Foregone Income (Rs.)	Caste												Total
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	
No answer													0
Don't know													0
0		3	1	1	1					1			7
1- 24	1	1	4	1				1					8
25- 49	1		1								1		3
50- 74		1	3	1	2		1						8
75- 99			2	1									3
100-124	1		1	1									3
125-149													0
150-199													0
200-299	1	1	1										3
300-399													0
Total	4	6	13	5	3	0	1	1	0	1	1	0	35

TABLE E - 8

Caste and Education of Father and Mother

Education of Father and Mother (grades)	Caste												Total
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		
	Fa.	Mo.	Fa.	Mo.	Fa.	Mo.	Fa.	Mo.	Fa.	Mo.	Fa.	Mo.	
No answer													0
Don't know													0
0	2	2	1	1	2	3			1	1		1	14
1- 5		1	1	2			2				1		7
6- 8	1	1	3	8									13
9-10	1	5	6	4	1		2						19
11-12	2	1	1										4
13-14	2		2	3									7
Over 14	2		4										6
Total	10	10	18	18	3	3	2	2	1	1	1	1	70

TABLE E - 9
Caste and Educational Aspirations with Aid

Educational Aspirations with Aid (years)	Caste												Total
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	
6- 8													0
9-10	1	2	3	2									8
11-12		1	5	2	2		1	1					12
13-14	2		1								1		4
Over 14	1	3	4	1	1								10
Don't know										1			1
Total	4	6	13	5	3	0	1	1	0	1	1	0	35

TABLE E - 10

Educational Aspirations and Landownership

Educational Aspirations															
Landowner- ship (bighas)	6-8		9-10		11-12		13-14		Over 14		No answer		Don't know		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
No answer															0
Don't know															0
0			3	4	6	2	1		1						17
1- 10								2							2
10- 99				1	3	1	1	2							8
100-199			1		2										3
200-299				1	2				1				1		5
300-399															0
Total	0	0	4	6	13	3	2	4	2	0	0	0	1	0	35

TABLE E - 11

Educational Aspirations and Estimated Future Income

Educational Aspirations															
Estimated Future Income (Rs.)	0-5		6-8		9-10		11-12		13-14		Over 14		Don't know		Total
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	
0					4		1		3		1				9
1- 49					1										1
50- 99					1	1			1						3
100-149					1		4	1							6
150-199							2								2
200-249							6	1							7
250-299					2						1				3
300-399									1		1		1		3
400-499															0
500-599							1								1
600-699															0
700-799															0
800-															0
Total	0	0	0	0	4	6	13	3	2	3	2	1	1	0	35

TABLE E - 12

Educational Aspirations and Difference in Salary From Those
Who Leave School Now

Educational Aspirations													
Salary Difference (Rs.)	6-8		9-10		11-12		13-14		Over 14		Don't know		Total
	M	F	M	F	M	F	M	F	M	F	M	F	
No answer			1										1
Don't know				1			2						3
0							1						1
1- 49				3	3	1	1	2					10
50- 99			2		4	1							7
100-149			1	1	3	1			1		1		8
150-199					1								1
200-249					1		1						2
250-299									1				1
300-349													0
350-399													0
400-449													0
450-499													0
500-					1								1
Total	0	0	4	5	13	3	2	5	2	0	1	0	35

APPENDIX F

ANSWERS TO QUESTIONS IN APPENDIX C

BY 9th GRADE PUPILS

TABLE F - 1
Caste Distribution and Number of Students

Caste	Numbers		
	Male	Female	Total
Brahmin	1	5	6
Other Twice Born	3	17	20
Jat	0	2	2
Other Hindus	0	1	1
Non-Hindus	0	1	1
Scheduled	1	0	1
Total	5	26	31

TABLE F - 2

Caste and Age of Students

Age	Caste												Total
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	
12		1		3									4
13	1	2	1	10		1				1			16
14		2		3									5
15			2	1		1		1			1		6
16													0
Total	1	5	3	17	0	2	0	1	0	1	1	0	31

TABLE P - 3
Caste and Fees

Fees (Rs.)	Caste												Total
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	
0- .99		2		8		1		1		1			13
1-1.99		3		9		1							13
2-2.99													0
3-3.99				2							1		3
4-4.99													0
5-5.99	1			1									2
6-6.99													0
7-7.99													0
8-8.99													0
Total	1	5	3	17	0	2	0	1	0	1	1	0	31

TABLE F - 4
Caste and Costs Other Than Fees

Caste													
Costs other than Fees	Brahmin		Other Twice Born		Jat		Other Hindus		Non-Hindus		Scheduled		
(Rs.)	M	F	M	F	M	F	M	F	M	F	M	F	Total
No answer		3	2	8		2		1		1			17
Don't know													0
0- .99													0
1-2.99				2							1		3
3-4.99													0
5-6.99	1	2	1	3									7
7-8.99				1									1
9-10.99				2									2
11-12.99													0
13-14.99													0
15-													1
Total	1	5	3	17	0	2	0	1	0	1	1	0	31

TABLE F - 5

Caste and Educational Aspirations

Educational Aspirations (Grades)	Caste												
	Brahmin		Other Twice Born		Jat		Other Hindus		Non-Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	Total
No answer			1										1
Don't know													0
10				5				1		1	1		8
11-12	1	2	2	6		1							12
13-14		3		4		1							8
Over 14				2									2
Total	1	5	3	17	0	2	0	1	0	1	1	0	31

TABLE F - 6
Caste and Estimated Future Income

Estimated Future Income (Rs.)	Caste												Total	
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled			
	M	F	M	F	M	F	M	F	M	F	M	F		
No answer				1		1								2
Don't know												1		1
0		2	1	8		1								12
1- 49														0
50- 99				2										2
100-149				3				1		1				5
150-199	1													1
200-249		2	1	2										5
250-299			1											1
300-399														0
400-499		1												1
500-599				1										1
600-699														0
700-799														0
800-														0
Total	1	5	3	17	0	2	0	1	0	1	1	0		31

TABLE F - 7
Caste and Foregone Income

Foregone Income (Rs.)	Caste												Total	
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled			
	M	F	M	F	M	F	M	F	M	F	M	F		
No answer				2										2
Don't know														0
0		1		6		1		1						9
1- 24														0
25- 49														0
50- 74	1	2	2	4		1					1			11
75- 99														0
100-124		1		1						1				3
125-149														0
150-199														0
200-299		1		4										5
300-399			1											1
Total	1	5	3	17	0	2	0	1	0	1	1	0		31

TABLE F - 8

Caste and Education of Father and Mother

Education of Father and Mother (years)	Caste												Total
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		
	Fa.	Mo.	Fa.	Mo.	Fa.	Mo.	Fa.	Mo.	Fa.	Mo.	Fa.	Mo.	
No answer													0
Don't know				1									1
0		2	2	4						1			9
1- 5	2	2	4	7		2		1				1	19
6- 8			5	5					1		1		12
9-10		2	3	3									8
11-12	3		2		2		1						8
13-14	1		2										3
Over 14			2										2
Total	6	6	20	20	2	2	1	1	1	1	1	1	62

TABLE F - 9
Caste and Educational Aspirations With Aid

Educational Aspirations With Aid (years)	Caste												Total	
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled			
	M	F	M	F	M	F	M	F	M	F	M	F		
No answer														0
Don't know		1		5										6
10				1				1		1	1			4
11-12	1		2	3		1								7
13-14		3	1	4		1								9
Over 14		1		4										5
Total	1	5	3	17	0	2	0	1	0	1	1	0		31

TABLE F - 10

Educational Aspirations and Landownership

Landowner- ship	Educational Aspirations												Total	
	9-10		11-12		13-14		Over 14		No answer		Don't know			
	M	F	M	F	M	F	M	F	M	F	M	F		
No answer														0
Don't know														0
0		5	3	7	1	5		2						23
1- 99	1	1		1										3
10- 99				1										1
100-199						1								1
200-299				1										1
300-499							2							2
Total	1	6	3	10	1	8	0	2	0	0	0	0	0	31

TABLE F - 11

Educational Aspirations and Estimated Future Income

Educational Aspirations													
Estimated Future Income (Rs.)	10		11-12		13-14		Over 14		No answer		Don't know		Total
	M	F	M	F	M	F	M	F	M	F	M	F	
No answer						2							2
Don't know	1												1
0		1	1	5		4		1					12
1- 49													0
50-99				2									2
100-149		3		2									5
150-199				1									1
200-249		2	1	1		1							5
250-299									1				1
300-399													0
400-499						1							1
500-599								1					1
Total	1	6	3	10	0	8	0	2	1	0	0	0	31

TABLE F - 12

Educational Aspirations and Difference in Salary From Those
Who Leave School Now

Educational Aspirations													
Salary Difference (Rs.)	9-10		11-12		13-14		Over 14		No answer		Don't know		Total
	M	F	M	F	M	F	M	F	M	F	M	F	
No answer			1										1
Don't know				1									1
0		2	1	6		7							16
1- 49	1												1
50- 99		4	1	2		1		1					9
100-149						1							1
150-199													0
200-249									1				1
250-299													0
300-349													0
350-399								1					1
400-449													0
450-499													0
500-													0
Total	1	6	3	9	0	9	0	2	1	0	0	0	31

APPENDIX G

ANSWERS TO QUESTIONS IN APPENDIX C

BY 11th GRADE (first year intermediate) PUPILS

TABLE G - 1

Caste Distribution and Number of Students

Caste	Numbers		
	Male	Female	Total
Brahmin	5	0	5
Other Twice Born	5	0	5
Jat	1	0	1
Other Hindus	0	0	0
Non-Hindus	6	0	6
<u>Scheduled</u>	0	0	0
Total	17	0	17

TABLE G - 2
Caste and Age of Students

Age (years)	Caste												Total
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	
15									1				1
16	2		1										3
17			1		1								2
18	2								3				5
19			1						1				2
20			2										2
21									1				1
22													0
23	1												1
Total	5	0	5	0	1	0	0	0	6	0	0	0	17

TABLE G - 3
Caste and Fees

Fees (Rs.)	Caste												Total	
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled			
	M	F	M	F	M	F	M	F	M	F	M	F		
No answer														0
Don't know														0
0-0.99														0
0.99-1.99										1				1
2.00-3.99					1									1
4.00-8.99	2		2							2				6
9.00-13.99	2		3							2				7
14.00-18.99	1									1				2
Total	5	0	5	0	1	0	0	0	0	6	0	0	0	17

TABLE G - 4
Caste and Costs Other Than Fees

Costs Other than Fees (Rs.)	Caste												
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	Total
No answer									1				1
Don't know													0
0-0.99			1										1
1-2.99	1		2						2				5
3-4.99	1		1						1				3
5-6.99	2		1		1				2				6
7-8.99													0
9-10.99	1												1
Total	5	0	5	0	1	0	0	0	6	0	0	0	17

TABLE G - 5

Caste and Educational Aspirations

Educational Aspirations (years)	Caste												Total
	Brahmin		Other Twice Born		Jat		Other Hindus		Non-Hindus		Scheduled		
	M	F	M	F	M	F	M	F	M	F	M	F	
No answer													0
Don't know													0
11-12													0
13-14	1		4							1			6
Over 14	4		1		1					5			11
Total	5	0	5	0	1	0	0	0	6	0	0	0	17

TABLE G - 6
Caste and Estimated Future Income

Estimated Future Income (Rs.)	Caste												Total	
	Brahmin		Other Twice Born		Jat		Other Hindus		Non-		Scheduled			
	M	F	M	F	M	F	M	F	M	F	M	F		
No answer														0
Don't know														0
0														0
1- 49														0
50- 99														0
100-149	1													1
150-199			1											1
200-249	1				1				2					4
250-299			1						1					2
300-399	2		2											4
400-499			1						2					3
500-599	1													1
600-699														0
700-799									1					1
800-														0
Total	5	0	5	0	1	0	0	0	6	0	0	0		17

TABLE G - 7
Caste and Foregone Income

Foregone Income (Rs.)	Caste													Total
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled			
	M	F	M	F	M	F	M	F	M	F	M	F		
No answer														0
Don't know														0
0	1		1											2
1- 24			1											1
25- 49	1		1		1					2				5
50- 74			1							1				2
75- 99														0
100-124	1									2				3
125-149														0
150-199										1				1
200-299	2		1											3
300-399														0
Total	5	0	5	0	1	0	0	0	6	0	0	0	0	17

TABLE G - 8

Caste and Education of Father and Mother

Education of Father and Mother (years)	Caste												
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled		Total
	M	F	M	F	M	F	M	F	M	F	M	F	
No answer										1			1
Don't know													0
0		2	2	2		1				4			11
1- 5		2		3	1				1				7
6- 8	1	1	2						2				6
9-10			1						1	1			3
11-12	3								1				4
13-14	1								1				2
Over 14													0
Total	5	5	5	5	1	1	0	0	6	6	0	0	34

TABLE G - 9

Caste and Educational Aspirations With Aid

Educational Aspirations With Aid (years)	Caste												Total	
	Brahmin		Other Twice Born		Jat		Other Hindus		Non- Hindus		Scheduled			
	M	F	M	F	M	F	M	F	M	F	M	F		
No answer														0
Don't know														0
11-12														0
13-14	1		2											3
Over 14	4		3		1					6				14
Total	5	0	5	0	1	0	0	0	6	0	0	0		17

TABLE G - 10

Educational Aspirations and Landownership

Educational Aspirations											
Landowner- ship (Bighas)	11-12		13-14		Over 14		No answer		Don't know		Total
	M	F	M	F	M	F	M	F	M	F	
No answer											0
Don't know											0
0			2		7						9
1- 9			1		1						2
10- 99			2		3						5
100-199											0
200-299											0
300-499					1						1
Total	0	0	5	0	12	0	0	0	0	0	17

TABLE G - 11

Educational Aspirations and Estimated Future Income

Educational Aspirations													
Estimated Future Income (Rs.)	10		11-12		13-14		Over 14		Don't know		No answer		Total
	M	F	M	F	M	F	M	F	M	F	M	F	
No answer													0
Don't know													0
0													0
1- 49													0
50- 99													0
100-149					1								1
150-199					1								1
200-249							4						4
250-299					2								2
300-399					2		2						4
400-499							3						3
500-599							1						1
600-699													0
700-							1						1
Total	0	0	0	0	6	0	11	0	0	0	0	0	17

TABLE G - 12

Educational Aspirations and Difference in Salary From Those
Who Leave School Now

Educational Aspirations													
Salary Difference (Rs.)	9-10		11-12		13-14		Over 14		Don't know		No answer		Total
	M	F	M	F	M	F	M	F	M	F	M	F	
No answer													0
Don't know													0
0													0
1- 49					1								1
50- 99					1		2						3
100-149					1		1						2
150-199					1		2						3
200-249					2		2						4
250-299													0
300-349							2						2
350-399							1						1
400-499							1						1
500-													0
Total	0	0	0	0	6	0	11	0	0	0	0	0	17

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